SOCIAL IMPACT ASSESSMENT REPORT

FOR

THE PROPOSED BRAKFONTEIN THERMAL COAL MINE NEAR DELMAS, MPUMALANGA

PREPARED FOR:

Universal Coal PLC
467 Fehrsen Street
Brooklyn
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August 2012

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Report Title:	**Social Impact Assessment for the proposed Brakfontein Thermal Coal Mine near Delmas, Mpumalanga**
Project Number:	**UNI1292**

Name	**Responsibility**	**Signature**	**Date**
Jan Perold	Reviewer		August 2012
Karien Lotter	Social specialist		August 2012

EXECUTIVE SUMMARY

Introduction

This document presents the results of the Social Impact Assessment (SIA) for the proposed Universal Coal PLC Brakfontein Thermal Coal Mine near Delmas, Mpumalanga Province, South Africa. The terms of reference for this study is as follows:

- To describe the baseline social environment in the vicinity of the project area, including the conditions on and immediately surrounding the proposed site and the identification of other projects planned for or already operational in the local municipal area;
- To identify and assess the prevalent attitudes and perceptions about mining in general and the proposed project in particular;
- To investigate and estimate the extend of possible physical and economic displacement as a result of the proposed project;
- To identify, describe and rate the significance of social impacts that may result from the proposed project; and
- To develop feasible, practical and cost-effective mitigation and enhancement measures to ameliorate the significance of negative impacts and enhance the benefits of positive social impacts.

Methodology

The study was designed to comply with the relevant national legislative requirements, such as those stipulated in NEMA, as well as with the relevant international best-practice standards, such as the Equator Principles, World Bank Standards and IFC Principles and Performance Standards. The activities undertaken as part of the study comprised the following:

- Defining the site-specific, local and regional study areas.
- Data collection, including a desktop review, investigative site visit, interviews with key informants, and a review of information from other specialist studies and the public participation process.
- The compilation of a baseline profile, including information on demographics, education, skills levels, employment, local and regional economic conditions, infrastructure and service delivery, community needs and challenges, spatial development and land claims. Information pertaining to other projects operation in the local municipal area is also presented, as are the prevalent concerns regarding and attitudes towards the proposed project.
- Assessment of impacts on the basis of issues identified through the public participation process, interviews with key informants and specialist opinion. Identified

impacts were categorised in terms of the project phase in which it is most likely to originate, namely the construction, operational or decommissioning phases.

- Rating of impacts in terms of their anticipated duration, extent, intensity and probability. Duration, extent and intensity ratings were combined into a measure of an impact's expected consequence. Consequence ratings, in turn, were combined with probability ratings to give a measure of an impact's overall significance.
- Identification of appropriate mitigation measures to avoid or ameliorate negative social impacts and to enhance positive ones. The rating procedure described above was then repeated to assess the expected consequence, probability and significance of each impact after mitigation. This post-mitigation rating gives an indication of the significance of residual impacts, while the difference between an impact's pre-and post-mitigation ratings therefore represents the degree to which the recommended mitigation measures are expected to be effective in reducing or ameliorating that impact.
- Formulating recommendations regarding the identified mitigation and enhancement measures, as well as other general recommendations that may aid the successful implementation of the proposed project.

Baseline socio-economic profile

The baseline socio-economic profile presented in this report is based on Census 2001 and Community Survey 2007 statistics and should thus be considered to be indicative as opposed to an accurate reflection of current reality. The qualitative data obtained through consultation with local stakeholders and the investigative site visit have also been incorporated into the profile.

The proposed project is located in Ward 7 of the Victor Khanye Local Municipality (VKLM) in the Nkangala District Municipality, Mpumalanga Province, South Africa. The main urban areas within the local municipal area are Delmas, Eloff, Sundra and Botleng.

In 2007, an estimated 50 500 people resided in the VKLM. Only 4% of the district municipality's population resides in the VKLM, translating into just more than 15 000 households. Black Africans account for the vast majority (90% or more) of residents in the study area, where isiNdebele and isiZulu are the most commonly-spoken languages. The study area has a relatively young population, with about one-third of individuals being under 15 years of age.

VKLM does not compare very favourably with the rest of the Nkangala District Municipality in term of educational levels of individuals above the age of 20: just over one-quarter of adults in the district municipality had Grade 12 or higher education, while in VKLM, this figure drops to 19%. Stakeholders consulted for the purpose of this SIA indicated that there is a high level of illiteracy among the local municipal population, and that there is a significant lack of skills among the local populace.

Unemployment is rife throughout the regional study area; according to 2001 Census statistics, it stood at 43% in VKLM and 44% in Nkangala District Municipality as a whole. In

2001, elementary occupations accounted for about one-third of jobs held by people in VKLM as a whole, and nearly 40% of jobs in Ward 7. By 2007, the number of people in elementary occupations in VKLM had decreased to 22%.

The average household income in Ward 7 in 2001 was just over R 3000 per month, which is almost exactly the same as the average household income in VKLM and Nkangala District Municipality as a whole. In Ward 6, by contrast, the average household earned R 5 500 per month.

Among those members of the study area's population who are employed, the most common sources of employment are in the agricultural, community/ social/ personal services, wholesale/ retail, manufacturing and mining sectors. Stakeholders consulted for the purposes of this SIA indicated that the mining sector's contribution towards employment has increase significantly over recent years.

Regarding economic sectors, and in terms of the strength of their contribution to the local economy, the most prominent economic sectors in VKLM are construction and trade, agriculture, mining and tourism.

The provision of services within VKLM is fairly limited, with only about 60% of households living in formal houses, having access to electricity or water-borne sanitation. Access to water services is only slightly better, with about 70% of households having running water in their dwelling or yard. An important constraint on the provision of services is the refusal of beneficiaries to pay for those services; at the time of developing the local municipal IDP, approximately 42% of municipal households were not paying for services.

Housing delivery in VKLM is not keeping pace with demand; there is an estimated housing backlog of approximately 5 000 units, the majority of which are located at Botleng Township. Thus there is a high prevalence of informal settlements, backyard shacks and squatter camps within the municipal area.

The most pressing needs and challenges in communities located within the VKLM are related to water and sanitation services, housing, crime, community development, public services and transport.

Regarding site-specific condition, the proposed project site is currently being used for agricultural, residential and business purposes. Physical characteristics of the site relevant to the social environment include a number of formal and informal residential structures, poultry farming infrastructure, other mining activities and business infrastructure.

In addition to the proposed project, there are 12 other operational mines in the VKLM. Stakeholder concerns regarding this mining and the project in particular pertain to physical and economic displacement, benefits for the local populace through social development initiatives and employment opportunities, excessive dust, blasting and high noise levels, the recruitment of mine workers, high volumes of traffic and social pathologies.

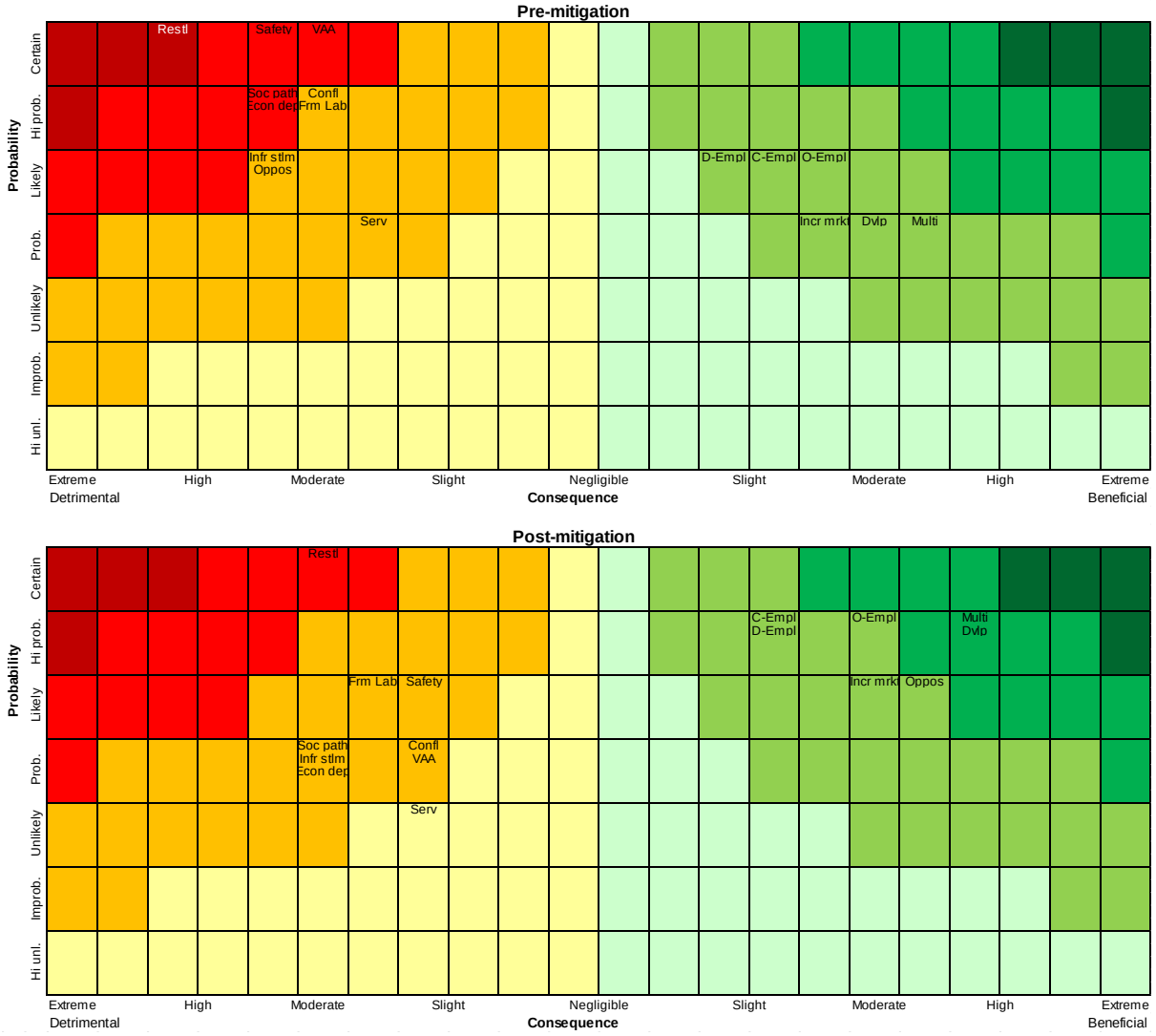
Predicted impacts and recommended mitigation measures

The anticipated socio-economic impacts of the proposed project, their consequence, probability and significance ratings, as well as recommended mitigation measures are summarised in the table below.

Summary of impacts, impact ratings and recommended mitigation measures

Code	Impact	Pre-mitigation:						Recommended mitigation	Post-mitigation:					
		Duration	Extent	Intensity	Conse-quence	Probability	Signifi-cance		Duration	Extent	Intensity	Conse-quence	Probability	Signifi-cance
C-Empl	Job creation during construction	Medium term	Municipal Area	Low - positive	Slightly beneficial	Likely	Minor - positive	- Maximise & monitor local recruitment - Prevent nepotism/ corruption in local recruitment structures - Promote employment of women and youth - Use of labour-intensive construction and mining methods	Medium term	Municipal Area	Moderate - positive	Moderately beneficial	Highly probable	Minor - positive
Multi	Multiplier effects on local economy	Project Life	Province/ Region	Moderate - positive	Moderately beneficial	Probable	Minor - positive	As for maximising employment benefits. Also: - Development of a register of local SMMEs - Linkages with skills development/ SMME development institutions - SMME skills development as part of SLP	Project Life	Province/ Region	High - positive	Highly beneficial	Highly probable	Moderate - positive
Incr mrkt	Increased markets for local entrepreneurs	Project Life	Municipal Area	Low - positive	Moderately beneficial	Probable	Minor - positive	- As for enhancing multiplier effects on the local economy	Project Life	Municipal Area	Moderate - positive	Moderately beneficial	Likely	Minor - positive
Restl	Physical and economic displacement	Permanent	Local	Very high - negative	Highly detrimental	Certain	Major - negative	- Determine party responsible for relocation - RAP development- - For non-vulnerable households and individuals, negotiate favourable outcome on a case-by-case basis	Permanent	Local	Low - negative	Moderately detrimental	Certain	Moderate - negative
Confl	Conflict/ competition between newcomers and incumbent population	Medium term	Municipal Area	High - negative	Moderately detrimental	Highly probable	Minor - negative	- Clearly communicate local recruitment policy - Use of community structures to identify local labour pool	Medium term	Local	Moderate - negative	Slightly detrimental	Probable	Minor - negative
Serv	Increased pressure on local services/ resources	Medium term	Municipal Area	Moderately high - negative	Moderately detrimental	Probable	Minor - negative	As for maximising local employment and discouraging influx - Also, consultation with municipality well in advance	Medium term	Municipal Area	Low - negative	Slightly detrimental	Unlikely	Negligible - negative
Soc path	Increased social pathologies	Project Life	Municipal Area	Moderately high - negative	Moderately detrimental	Highly probable	Moderate - negative	- Extensive HIV/ AIDS awareness campaign - Cease construction activities before nightfall - Clear identification of workers; prevention of loitering - Liaison with police - Do not recruit labourers on-site	Project Life	Municipal Area	Moderate - negative	Moderately detrimental	Probable	Minor - negative
Infr stlm	Growth of informal settlements	Long term	Municipal Area	High - negative	Moderately detrimental	Likely	Minor - negative	- As for conflict/ competition between newcomers and incumbent population	Long term	Municipal Area	Moderately high - negative	Moderately detrimental	Probable	Minor - negative
Safety	Safety impacts	Project Life	Local	High - negative	Moderately detrimental	Certain	Moderate - negative	- Access control to all project elements, including fencing - PPE for mines workers - Notification of blasting activities - Blasting and storage of hazardous materials to adhere to prescribed regulations - Traffic control to prevent speeding - Road maintenance - Community education	Project Life	Local	Low - negative	Moderately detrimental	Likely	Minor - negative
VAA	Visual/ acoustic/ air quality impacts	Project Life	Local	Moderately high - negative	Moderately detrimental	Certain	Moderate - negative	- Impacts on visual environment, noise, vibration, air quality and groundwater are discussed in separate specialist study: as per relevant specialist reports - For sense of place: rehabilitation - For health and well-being: as for displacement	Project Life	Local	Low - negative	Moderately detrimental	Probable	Minor - negative
Frm Lab	Loss of farm labour to the mines	Project Life	Municipal Area	Moderate - negative	Moderately detrimental	Highly probable	Minor - negative	- No deliberate recruitment of workers from farms	Project Life	Municipal Area	Low - negative	Moderately detrimental	Likely	Minor - negative
O-Empl	Job creation during operation	Project Life	Municipal Area	Low - positive	Moderately beneficial	Likely	Minor - positive	As for job creation during construction	Project Life	Municipal Area	Moderate - positive	Moderately beneficial	Highly probable	Minor - positive
Dvlp	Community development and addressing community needs	Project Life	Province/ Region	Low - positive	Moderately beneficial	Probable	Minor - positive	- Liaison with beneficiaries to ensure needs are met - Representation of women in consultation - Collaboration during implementation - Implement CSR initiatives	Beyond project life	Province/ Region	Moderately high - positive	Highly beneficial	Highly probable	Moderate - positive
Econ dep	Economic dependency on operation	Beyond project life	Municipal Area	Moderate - negative	Moderately detrimental	Highly probable	Moderate - negative	-- SLP should be drafted in such a way that will minimise the impact of retrenchments and downscaling - Transparency regarding employment practices and CSR initiatives - Keep communities updated - Presentation of EIA findings in clear and understandable manner	Beyond project life	Municipal Area	Low - negative	Moderately detrimental	Probable	Minor - negative
Oppos	Opposition because of perceived negative impacts	Project Life	Municipal Area	High - negative	Highly detrimental	Likely	Minor - negative	- Communicate commitments regarding LED - Transparency regarding employment practices - Presentation of EIA findings in clear and understandable manner	Project Life	Municipal Area	Moderately high - positive	Moderately beneficial	Likely	Minor - positive
D-Empl	Job creation during decommissioning	Short term	Municipal Area	Low - positive	Slightly beneficial	Likely	Minor - positive	As for job creation during construction	Short term	Municipal Area	Moderate - positive	Slightly beneficial	Highly probable	Minor - positive

The pre- and post-mitigation significance ratings assigned to identified impacts are graphically represented in the figure below. In this figure, the entries in the various coloured cells correspond to the codes given for impacts in the first column of the foregoing table.



Significance:	Negative	Positive
Major		
Moderate		
Minor		
Negligible		

Graphical representation of consequence, probability and significance ratings

Assessment of alternatives

The most pertinent project alternative in the case of this project is the ***no-go alternative***. The approach adopted in the assessment of impacts in this study entailed a comparison between anticipated future socio-economic conditions, with and without the project. Hence the no-go alternative would essentially imply that none of the impacts identified would materialise, and that socio-economic conditions in the study area would continue to display the characteristics and trends observed in the socio-economic baseline profile.

Possible alternative ***land uses*** in the case that the project is not implemented include agriculture combined with low-density residential (current land use) and low-cost housing. With regards to ***agriculture***, the soils and land use impact assessment has found that the project site is situated on prime agricultural land. The aforementioned study considers the financial impact the proposed project will have on the maize production industry; this impact is therefore not considered again in this study. Due to the increasing prevalence of mining in the surrounding area, the viability of using the proposed project site for ***low-density residential*** purposes is decreasing; other mining operations in the area have resulted in a decreased quality of life for residents located on or surround the project site under consideration in this study. In fact, most surrounding land owners indicated their desire to be relocated elsewhere. Similarly, the viability of ***low-cost housing*** is jeopardised by the presence of other mining operations in the area. Additionally, there is a trend in the local municipal area of individuals moving out of more rural settings into the town of Delmas, in search of employment opportunities and for the sake of better access to services. ***Mining*** thus appears to be the most viable and appropriate land use for the project site from a social perspective.

The scope for ***mine plan and infrastructure layout alternatives*** is limited by the geographical characteristics of the area; that is to say, the location of ore largely determines the mine plan, as does the location of wetlands. This fact, together with the nature of the impacts described in Section 5, implies that changes to the mine plan and layout of infrastructure will not have a significant impact on the impacts to the social environment.

The only aspect of the project's design that *does* lend itself to feasible alternatives is the alignment of ***transport routes***. Of these alternatives, both Options 2 and 3 make use of the gravel road that passes along the front of the Brakfontein Meat Market, as well as a number of settlements along that road. Due to the presence of these settlements, there are a number of school children on the road during the afternoons, walking home from (presumably) a nearby bus stop. Thus, the safety risk these options have for the local community, as well as the dust to be generated by HMV that is expected to affect the meat market, results in Option 1 being the preferred transport alternative from the proposed project to the Kangala Colliery. The route followed by Option 1 is used by a number of other mines already operational in the area.

Conclusions and recommendations

The results of the study indicate that the recommended mitigation measures are expected to reduce the significance of negative impacts to acceptable levels, while positive impacts will on average be significantly enhanced to maximise benefits to surrounding communities.

General recommendation pertaining to training, community liaison, politics, recruitment and blasting are also made in order to facilitate the successful implementation of the proposed project.

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Abbreviations

ABET	Adult basic education
CLOs	Community liaison officers
CSR	Corporate Social Responsibility
EIA	Environmental Impact Assessment
FET	Further Education and Training
GGP	Gross Geographic Product
HMV	Heavy motor vehicles
HRD	Human Resource Development
IDP	Integrated Development Plan
IFC	International Finance Corporation
LED	Local Economic Development
LoM	Life of mine
MPRDA	Mineral and Petroleum Resources Development Act
mt	Million tonnes
NEMA	National Environmental Management Act
PPE	Personal protective equipment
PPP	Public participation process
RAP	Resettlement action plan
ROM	Run-of-mine
SAQA	South African Qualifications Authority
SDF	Spatial Development Frameworks
SIA	Social Impact Assessment

SLP	Social and Labour Plan
SMME	Small, medium and micro enterprise
STDs	Sexually transmitted diseases
ToR	Terms of Reference
VCT	Voluntary counselling and testing
VKLM	Victor Khanye Local Municipality

Details of the Social Impact Assessment Study Team

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Reviewer

Dr Perold has extensive national and international experience in social impact assessment, resettlement planning, social surveys, statistics and the compilation of social and labour plans. He has been involved in a variety of projects in the following countries: South Africa, Mozambique, Swaziland, Botswana, Ghana, Tanzania, Rwanda, Burundi and the Central African Republic.

Dr Perold is registered at the Health Professions Council of South Africa as a research psychologist, and has completed his PhD degree in Research Psychology at the University of Pretoria. His doctoral thesis focuses on the application of systems theory to analyse the psychosocial dynamics of public participation. He also has a strong natural science background, having attained an Honours Degree in Physics.

A detailed CV for Dr Perold is appended (**Appendix A**).

Specialist

Ms Lotter has been consulting as a social scientist since 2007, and specialises in social impact assessments, resettlement planning and stakeholder engagement. She has been involved in a number of international projects, including projects in Liberia, Zanzibar, Malawi, Mozambique, Central African Republic and Angola. Many of these projects were held to international best-practice standards stipulated by the IFC and World Bank. She has gained experience in a number of social research aspects, including quantitative and qualitative primary data collection, analysis and presentation.

Ms Lotter is in the final stages of completing her Master's degree in Research Psychology at the University of Pretoria. Her dissertation deals with the accuracy with which social impacts are predicted, and suggests possible reasons for inaccuracies in predictions.

A detailed CV for Ms Lotter is appended (**Appendix A**).

DECLARATION OF INDEPENDENCE

I, Jan J. Perold as duly authorised representative of Digby Wells and Associates (Pty) Ltd., hereby confirm my independence (as well as that of Digby Wells and Associates (Pty) Ltd.) as a specialist and declare that neither I nor Digby Wells and Associates (Pty) Ltd. have any interest, be it business, financial, personal or other, in any proposed activity, application or appeal in respect of universal Coal, was appointed as environmental assessment practitioner in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), other than fair remuneration for work performed, specifically in connection with the Social Impact Assessment for the proposed Brakfontein Thermal Coal Mine near Delmas, Mpumalanga.

_____

Full name: Jan Johannes Perold

Title/ Position: Social Researcher

Qualification(s): PhD (Research Psychology)

Experience (years): 13 years

Registration: Health Professions Council of South Africa

1 INTRODUCTION

This document presents the results of the Social Impact Assessment (SIA) for the proposed Universal Coal PLC Brakfontein Thermal Coal Mine near Delmas, Mpumalanga Province, South Africa. The SIA is one of 12 specialist assessments that were undertaken as part of the Environmental Impact Assessment (EIA) for the aforementioned project. The other specialist studies are as follows:

- Air quality impact assessment (including dust monitoring)
- Noise impact assessment
- Fauna and flora impact assessment
- Biodiversity impact assessment
- Wetland impact assessment
- Aquatic impact assessment
- Visual impact assessment (including a topography assessment)
- Hydrogeological impact assessment
- Hydrological impact assessment (surface water)
- Soils and land use impact assessment
- Heritage impact assessment

This report is the outcome of the second phase of the SIA, namely the impact assessment phase. The first phase, being the scoping study, culminated in a Draft Scoping Report (also compiled by Digby Wells) and was released for public comment in July 2012. Digby Wells also conducted a Social and Environmental Screening Study, which was finalised in August 2011.

1.1 Terms of reference for the study

The terms of reference (ToR) for this study are as follows:

- To describe the baseline social environment in the vicinity of the project area, including the conditions on and immediately surrounding the proposed site and the identification of other projects planned for or already operational in the local municipal area;
- To identify and assess the prevalent attitudes and perceptions about mining in general and the proposed project in particular;
- To estimate the extent of possible physical and economic displacement as a result of the proposed project;
- To identify, describe and rate the significance of social impacts that may result from the proposed project;

- To develop feasible, practical and cost-effective mitigation and enhancement measures to ameliorate the significance of negative impacts and enhance the benefits of positive social impacts; and
- To document the outcomes of the activities listed above in a specialist SIA report.

1.2 Policy and legal framework

The following pieces of national legislation are relevant to an SIA for a mining project:

- The ***National Environmental Management Act*** (NEMA; Act 107 of 1998), which provides the legal framework for implementing the state's constitutional obligations with regard to environmental management. NEMA sets forth a number of principles for guiding decision-making on proposed activities that could affect the social, economic and biophysical environment. The following principles are relevant to a socio-economic impact assessment:
  - Decisions regarding a proposed activity should not only be based on their environmental impact and economic feasibility, but should also take into account their social sustainability;
  - Decisions must take into account the interests, needs and values of all interested and affected parties, and must take recognise all forms of knowledge, including traditional and ordinary knowledge;
  - The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated and decisions must be appropriate in the light of such considerations and assessment; and
  - Decisions must be taken in an open and transparent manner and access to information must be provided in accordance with the law.
- The ***Occupational Health and Safety Act*** (Act 85 of 1993): The objective of this Act is to provide for the health and safety of persons at work. In addition, the Act requires that, as far as reasonably practicable, the employers must ensure that their activities do not expose *non-employees* to health hazards.
- The ***Mineral and Petroleum Resources Development Act*** (MPRDA, Act 28 of 2002), which requires that mining companies assess the social impacts of their activities from start to closure, and beyond, and which also requires that mining companies compile and implement a Social and Labour Plan (SLP) to promote socioeconomic development in their affected communities and to prevent or lessen negative social impacts.
- The ***Extension of Security of Tenure Act*** (Act 62 of 1997), which confers certain rights to non-landowning residents of a property, which such rights are linked to the period of time in which persons have been resident on the land.

- The ***Development Facilitation Act*** (Act 67 of 1995), which sets out the principle that policy, administrative practice and laws should support effective integrated planning, the optimal use of existing resources, the promotion of sustainable development, the requirement that land use should be judged on its merits.

National policies or legislation in southern Africa do not explicitly address involuntary resettlement. This policy vacuum is inadequately filled by complicated land tenure, environmental and planning legislation. Consequently the existing legal frameworks for addressing involuntary resettlement are inadequate and do not aid communities, implementing agents or mining companies. Instead they often obscure rights and responsibilities, cause unnecessary delays to resettlement projects and increase the total costs involved (Sonnenberg & Münster, 2001). In view of this gap in national legislation, resettlement processes in South Africa often the guiding principles set out in the International Finance Corporation's (IFC) *Performance Standard 5: Land Acquisition and Involuntary Resettlement*, which sets out the following objectives (IFC, 2006):

- To avoid or at least minimise involuntary resettlement wherever feasible by exploring alternative project designs;
- To mitigate adverse social and economic impacts from land acquisition or restrictions on affected persons' use of land by: (i) providing compensation for loss of assets at replacement cost; and (ii) ensuring that resettlement activities are implemented with appropriate disclosure of information, consultation, and the informed participation of those affected;
- To improve or at least restore the livelihoods and standards of living of displaced persons; and
- To improve living conditions among displaced persons through provision of adequate housing with security of tenure at resettlement sites.

Another IFC Performance Standard – *Performance Standard 1: Social and Environmental Assessment and Management Systems* – sets out international best-practice standards for conducting a SIA. Amongst other things, these standards require that a SIA identify individuals and groups that may be differentially or disproportionately affected by the project because of their disadvantaged or vulnerable status (where such status may be related to an individual's or group's ethnic affiliation, gender, socio-economic status, health or dependence on unique natural resources). Where groups are identified as disadvantaged or vulnerable, differentiated measures must be identified and implemented to ensure that adverse impacts do not fall disproportionately on them and that they are not disadvantaged in sharing development benefits and opportunities.

1.3 Limitations of this study

This report is based on available information obtained from the client, the internet, other specialists and stakeholders consulted during fieldwork. The study was conducted within available timeframes and budget. The sources consulted are in no way exhaustive, although

deemed sufficient to meet the ToR for the current study. No information has been deliberately excluded from this report, and it is assumed that no party withheld relevant information from the specialists.

The social specialists acknowledge the importance and value of local knowledge obtained through consultation with a variety of local stakeholders. As such, sincere efforts were made during the consultation process to elicit the relevant local knowledge required for a comprehensive and accurate impact assessment of the social environment.

A limitation of this study pertains to the reliability and validity of secondary social baseline data; obtaining information from secondary sources poses a number of restrictions on the use and interpretation of that information. Of relevance here are the Census 2001 and the 2007 Community Survey statistics on which the socio-economic baseline profile is primarily based. It is noteworthy that concerns have been raised regarding the integrity of this data: in particular, Statistics South Africa (StatsSA) has mentioned the following main concerns regarding the 2007 Community Survey (Statistics South Africa, 2007):

- The institutional population is an approximation to 2001 numbers, and is thus not new data;
- Unemployment in the Community Survey is higher than in the Census 2001 statistics and less reliable because of the different ways in which questions were asked;
- The income data includes unrealistically high income for children, presumably because of misinterpretation of the question (for example, parents could have listed their income as the income for the child); and
- Because the Community Survey is based on a random sample and is thus not a full Census, any interpretation should be understood to have some random fluctuation in data.

Despite the limitations and outdated nature of the Census 2001 and 2007 Community Survey data, it remains the most widely recognised dataset for the South African population, and municipal planning (both at district and local level) is often based on data extrapolated from the 2001 Census data.

1.4 Structure of the report

The remainder of this report is structured as follows:

- ***Section 2*** details the methodology employed for this SIA and includes details on the study areas, the various data collection activities, information on the completion of the baseline profile, the identification and rating of impacts, the design of mitigation and enhancement measures, as well as consideration given to project alternatives.
- Details of the proposed project are presented in ***Section 3***, which includes motivation for the proposed project, a project description, consideration of project alternatives, and workforce and expenditure forecasts.

- ***Section 4*** provides a baseline description of the study area, and includes the socio-economic context of both the regional and local study areas. Site-specific conditions are also presented, as is a list of other mining projects in the local municipal area. Finally, stakeholders' attitudes towards and concerns regarding the proposed project are explored.
- ***Section 5*** is dedicated to the identification, assessment and rating of potential social impacts that may arise as a result of the proposed project, and includes recommended mitigation measures for negative impacts and enhancement measures for positive impacts.
- The impact project alternatives will have on the identified social impacts is considered in ***Section 6***.
- Finally, ***Section 7*** presents the main conclusions of the SIA and contains recommendations relevant to the implementation of the proposed project.

2 METHODOLOGY

The activities undertaken as part of the study are outlined below. As mentioned in Section 1, it is aligned with international best-practice standards as stipulated by the IFC.

2.1 Definition of the study areas

Study areas were defined for this SIA based on the type of social impacts that each area is expected to experience as a result of the proposed project. Generally the social impacts of a project can be divided into three broad categories, as follows:

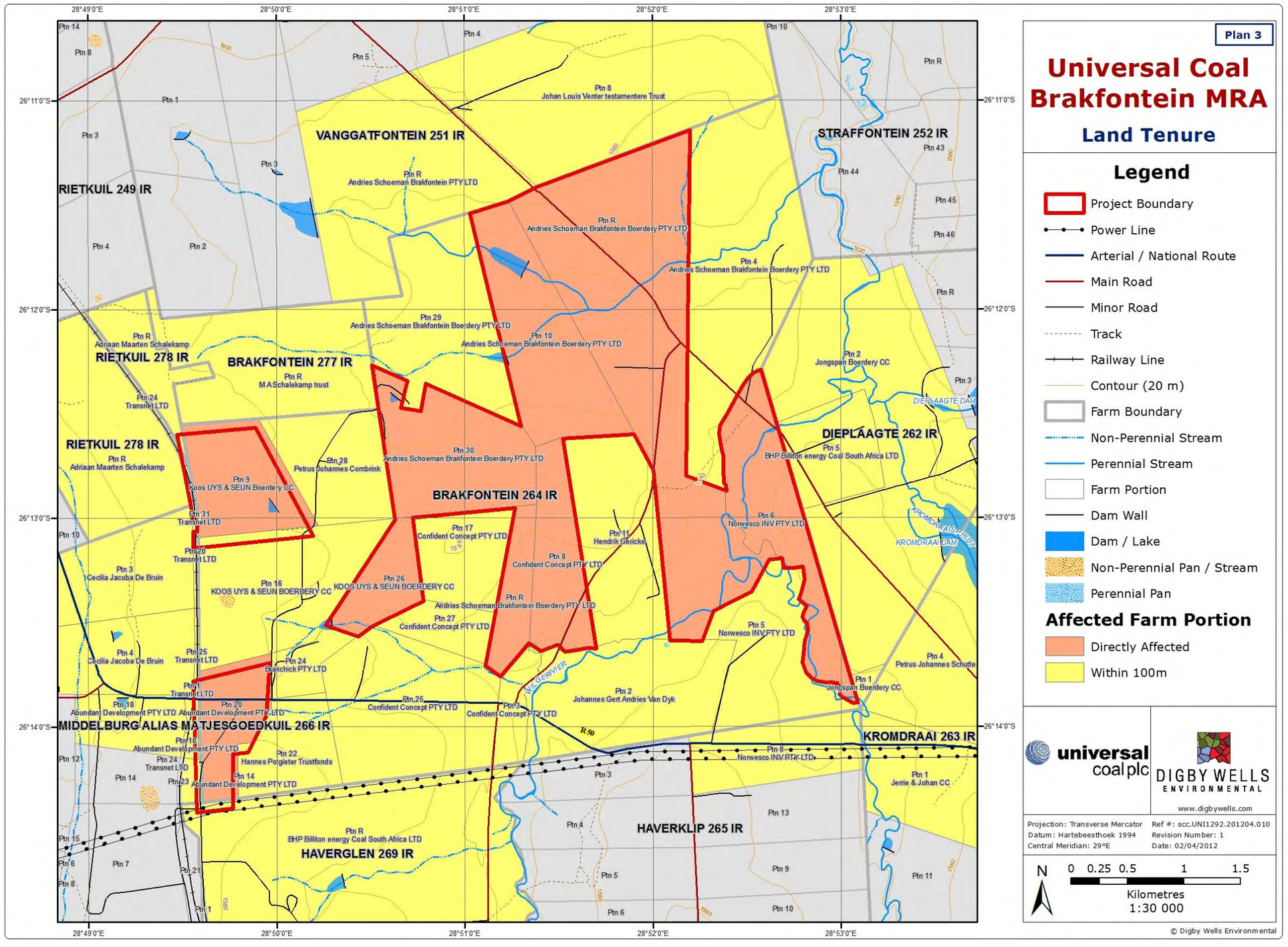
- Impacts related to the ***physical intrusion*** of project infrastructure and ***project-related activities*** on the surrounding environment (which may include socio-economic impacts arising from land acquisition, noise, dust, vibration and changes in the visual characteristics of the landscape);
- Impacts related to the ***"economic pull"*** exerted by the project (including job creation, an influx of workers and job-seekers into the project area, as well as the concomitant risk of increased social pathologies and community conflict); and
- ***Indirect*** or ***induced*** impacts that are by-products or ripple-effects of the impacts in the foregoing two categories. These could include increased pressure on local services and resources (as a result of population influx), multiplier effects in the local and regional economy (as a result of the creation of new jobs and project-related expenditure), macroeconomic benefits of the project and benefits derived from corporate social investment by the project proponent.

Accordingly, three concentric study areas were defined for the purposes of this study, corresponding to the three categories of impacts listed above. The study areas are as follows:

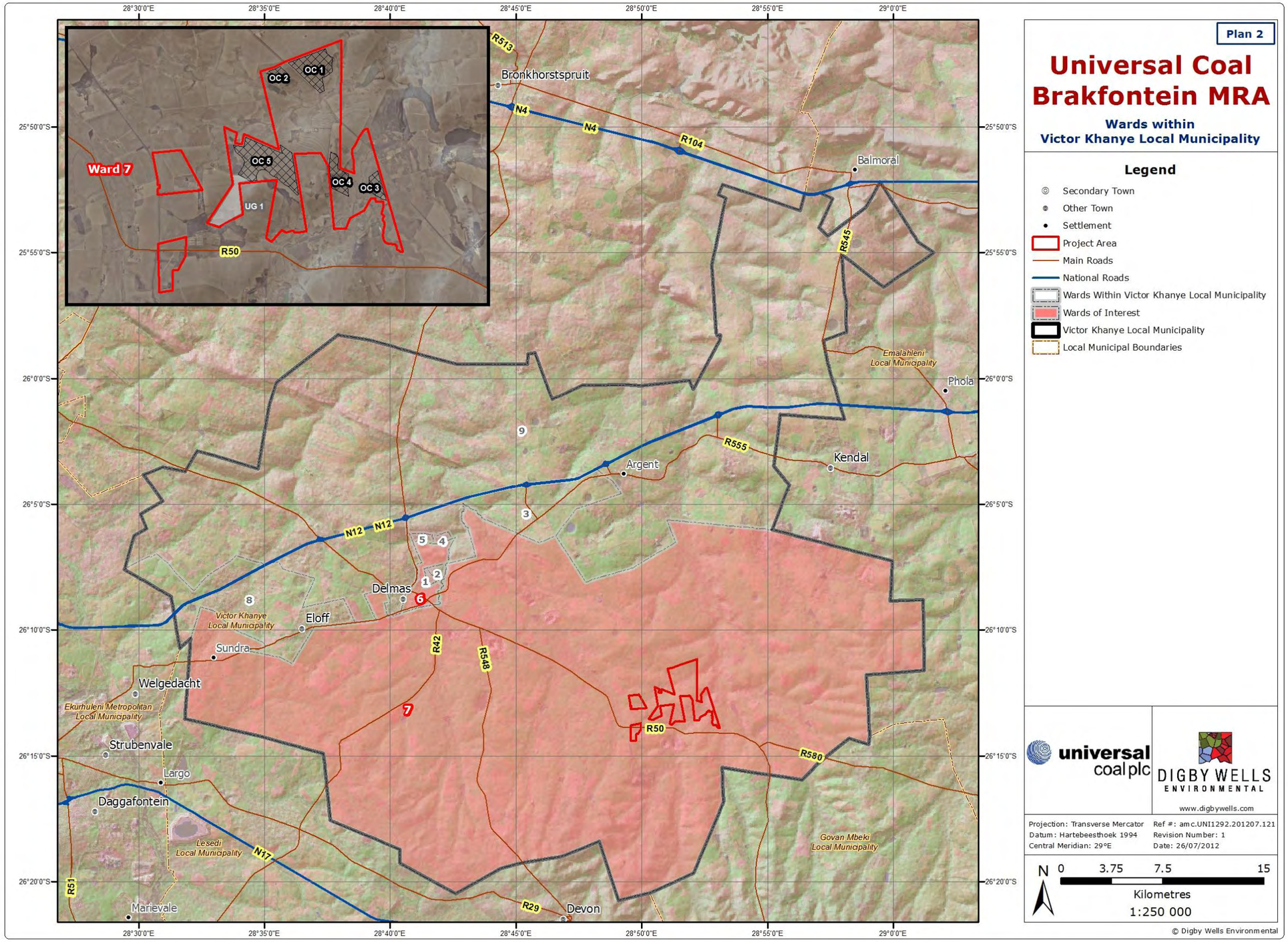
- The ***site-specific study area*** – the area likely to experience impacts related to the physical intrusion by project infrastructure and project-related activities. This study area is defined as the extent of the farm portions on which the project footprint is located, as well as the farm portions located within 100m of the project footprint (these are listed in Table 1 and shown in Plan 1).
- The ***local study area*** – the area likely to experience impacts related to the "economic pull" exerted by the project. This area is defined as the affected municipal ward which surrounds the proposed development sites (Ward 7), as well as the ward constituting the main labour sending area of the project (Ward 6), both located in the Victor Khanye Local Municipality (VKLM) (see Plan 2).
- The ***regional study area*** – the area likely to experience the indirect or induced impacts of the project. This area is defined as the VKLM, which includes the towns of Delams, Eloff and Sundra (see Plan 2).

Table 1: Farm portions comprising the site-specific study area (per land owner)

Land owner	Farm	Portion	Affected
Abundant Development Pty Ltd	Brakfontein 264 IR	20	Directly Affected
	Middelburg alias Matjesgoedkuil 266 IR	14, 18	Within 100m
Adriaan Maarten Schalekamp	Rietkuil 278 IR	RE	Within 100m
BHP Billiton Energy Coal South Africa Ltd	Dieplaagte 262 IR	5	Within 100m
	Haverglen 269 IR	RE	Within 100m
Brakchick Pty Ltd (Jan and Karel Moolman)	Brakfontein 264 IR	24	Within 100m
Cecilia Jacoba De Bruin	Middelburg alias Matjesgoedkuil 266 IR	3,4	Within 100m
Confident Concept Pty Ltd	Brakfontein 264 IR	8	Directly Affected
		3, 17,25, 27	Within 100m
Hannes Potgieter Trust	Brakfontein 264 IR	22	Within 100m
Hendrik Gericke (Johan Gericke)	Brakfontein 264 IR	11	Within 100m
Jerrie & Johan CC	Kromdraai 263 IR	1	Within 100m
Johan and Louis Venter trust (Frans Venter)	Brakfontein 264 IR	10, 30, RE	Directly Affected
		4, 29	Within 100m
	Vanggatfontein 251 IR	8, RE	Within 100m
Johannes Gert Andries Van Dyk (Johan van Dyk)	Brakfontein 264 IR	2	Within 100m
Jongspan Boerdery CC	Dieplaagte 262 IR	1, 2	Within 100m
Koos Uys & Seun Boerdery CC	Brakfontein 264 IR	9, 26	Directly Affected
		16	Within 100m
M A Schalekamp trust	Brakfontein 277 IR	RE	Within 100m
Norwesco INV Pty Ltd	Brakfontein 264 IR	6	Directly Affected
		5	Within 100m
	Haverklip 265 IR	8	Within 100m
Petrus Johannes Combrink	Brakfontein 264 IR	28	Within 100m
Petrus Johannes Schutte	Kromdraai 263 IR	4	Within 100m
Transnet Ltd	Brakfontein 264 IR	31	Within 100m
	Middelburg alias Matjesgoedkuil 266 IR	1, 20, 24, 25	Within 100m
	Rietkuil 249 IR	24	Within 100m



Plan 1: The site-specific study area



Plan 2: The local and regional study areas

2.2 Data collection

The information presented in this document was obtained through the following data collection activities:

- A ***desktop review*** of available documents to obtain relevant baseline socio-economic information on the different study areas. Documents reviewed include the following:
  - Integrated Development Plans (IDPs), Local Economic Development Plans (LEDs) and Spatial Development Frameworks (SDFs) of the local and district municipalities;
  - Census 2001 and Community Survey 2007 data;
  - Previous studies and reports concerning the proposed project, specifically the Social and Environmental Screening Study report and the SLP for the proposed project;
  - Available maps and satellite imagery.
- ***Investigative site visit*** undertaken during July 2012, which allowed the specialist to become familiar with the study area and gain an understanding of the prevalent social issues and concerns.
- ***Interviews with key informants***, including directly affected land owners, land owners situated adjacent the project footprint, a representative from the VKLM and other specialists involved in the EIA. A record of all interviews conducted is given in Table 2. The main purpose of these consultations was to:
  - Assess stakeholders' perceptions, concerns and expectations regarding the proposed project,
  - Verify baseline socio-economic information collected through the desktop review;
  - Identify potential impacts of the proposed project on people's lives and livelihoods; and
  - Help identify possible mitigation measures to avoid or reduce negative impacts of the project, and enhance the positive ones.
- ***Information from other specialist studies***. The specialist studies conducted as part of the EIA are listed in Section 1 above. Many of these specialist studies focus on impacts that have significant, although indirect, social implications. For example, the noise impact assessment focuses more on the level of noise that will be generated as a result of mining operations and how this will change the ambient noise levels in the area, as opposed to investigating the effect this noise will have on the quality of life for the surrounding land owners and communities. Similarly, the air quality impact assessment assesses the level of air pollution that may result from the proposed project and not the implications this will have on the health and well-being of people in the vicinity of the project area. The SIA thus included a review of the

findings of these specialist studies to assess the social impacts that derive from the impacts investigated by the studies. .

- ***Information from the public consultation process***, including minutes of meetings and the Comments and Response report. Reviewing this information provided the social specialist with additional information regarding the concerns, attitudes and perceptions relating to the proposed project.

Table 2: Interviews conducted as part of the specialist study

Number	Interviewee	Designation	Date of consultation
1	Mr Johan Gericke	Land owner	19 July 2012
2	Mr Bongani Nyakale	Member of Sechaba Sesinosi	19 July 2012
3	Mr Xolisile Nkosi	Department of Human Capital Development, Victor Khanye Local Municipality	19 July 2012
4	Mr Frans Venter	Land owner	20 July 2012
5	Mr Hannes van Dyk and Ms Beryl van Dyk	Land owners	20 July 2012
6	Mr Karel Moolman	Land owner	20 July 2012
7	Mr Johan Schalekamp	Land owner	20 July 2012

2.3 Compilation of a socio-economic baseline profile

On the basis of the information collected through the desktop review and interviews with key informants, a socio-economic baseline profile was compiled of the local and regional study areas defined in Section 2.1. Topics considered as part of this profile include the following:

- Demographics, including population size, age and gender distributions, as well as ethnicity;
- Education and skills;
- Employment, including levels of employment and employment sectors;
- Economic conditions, including the trade, mining, agriculture and tourism sectors, in addition to economic development targets;
- Infrastructure and services, including housing, household energy, water, sanitation, transport, health, education, safety and security;
- Community needs and challenges; and
- Spatial development and land claims.

Information pertaining to other projects in the local municipal area is also presented, as are the prevalent concerns regarding and attitudes towards the proposed project.

2.4 Identification of impacts

A range of issues and potential social impacts of the proposed project were identified based on information obtained through the public participation process (PPP), consultation that took place for the purposes of the SIA and specialist opinion. These impacts are categorised according to the project phase (construction, operation and decommissioning) in which each is likely to occur. Impacts are discussed in Section 5 below.

2.5 Rating of impacts

The impact rating process is designed to provide a numerical rating of the various social impacts identified. The significance rating process follows the established impact/ risk assessment formula, as shown below:

Significance = consequence of an event x probability of the event occurring

where

Consequence = Type of impact x (Intensity + Spatial Scale + Duration)

and

Probability = Likelihood of an impact occurring

In the formula for calculating consequence:

***Type of impact* = +1** (for positive impacts) ***or* -1** (for negative impacts)

The weight assigned to the various parameters for positive and negative impacts in the formula is presented in Table 3 to Table 6 below.

Table 3: Rating options: intensity

Rating	Negative impacts (Type of impact = -1)	Positive impacts (Type of impact = +1)
7	Irreparable damage to highly valued items of great cultural significance or complete breakdown of social order	Noticeable, on-going social benefits which have improved the livelihoods and living standards of the local community in general
6	Irreparable damage to highly valued items of cultural significance or breakdown of social order	Great improvement to livelihoods and living standards of a large percentage of population
5	Very serious widespread social impacts. Irreparable damage to highly valued items	On-going and widespread positive benefits to local communities which improves livelihoods
4	On-going serious social issues. Significant damage to structures / items of cultural significance	Average to intense social benefits to some people
3	On-going social issues. Damage to items of cultural significance	Average, on-going positive benefits, not widespread but felt by some
2	Minor medium-term social impacts on local population. Mostly repairable. Cultural functions and processes not affected	Low positive impacts experience by very few of population
1	Minimal social impacts, low-level repairable damage to commonplace structures	Some low-level social benefits felt by very few of the population

Table 4: Rating options: spatial scale

Rating	Definition
7	International: The effect will occur across international borders
6	National: Will affect the entire country
5	Province/ Region: Will affect the entire province or region
4	Municipal Area: Will affect the whole municipal area
3	Local: Extending across the site and to nearby settlements
2	Limited: Limited to the site and its immediate surroundings
1	Very limited: Limited to specific isolated parts of the site

Table 5: Rating options: duration

Rating	Definition
7	Permanent: The impact will remain long after the life of the project
6	Beyond project life: The impact will remain for some time after the life of the project
5	Project Life: The impact will cease after the operational life span of the project
4	Long term: 6-15 years
3	Medium term: 1-5 years
2	Short term: Less than 1 year
1	Immediate: Less than 1 month

Table 6: Rating options: probability

Rating	Definition
7	Certain/ Definite: There are sound scientific reasons to expect that the impact will definitely occur
6	Almost certain/ Highly probable: It is most likely that the impact will occur
5	Likely: The impact may occur
4	Probable: Has occurred here or elsewhere and could therefore occur
3	Unlikely: Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur
2	Rare/ improbable: Conceivable, but only in extreme circumstances and/ or has not happened during lifetime of the project but has happened elsewhere. The possibility of the impact materialising is very low as a result of design, historic experience or implementation of adequate mitigation measures
1	Highly unlikely/None: Expected never to happen.

Impacts are rated prior to mitigation or enhancement and again after consideration of the proposed mitigation or enhancement measures. The impact is then determined and categorised into one of eight categories, as indicated in the table below.

Table 7: Significance ratings

Score	Description	Rating
109 to 147	A very beneficial impact which may be sufficient by itself to justify implementation of the project. The impact may result in permanent positive change	Major (positive)
73 to 108	A beneficial impact which may help to justify the implementation of the project. These impacts would be considered by society as constituting a major and usually a long-term positive change to the (natural and/or social) environment	Moderate (positive)
36 to 72	An important positive impact. The impact is insufficient by itself to justify the implementation of the project. These impacts will usually result in positive medium to long-term effect on the social and/or natural environment	Minor (positive)
3 to 35	A small positive impact. The impact will result in medium to short term effects on the social and/or natural environment	Negligible (positive)
-3 to -35	An acceptable negative impact for which mitigation is desirable but not essential. The impact by itself is insufficient even in combination with other low impacts to prevent the development being approved. These impacts will result in negative medium to short term effects on the social and/or natural environment	Negligible (negative)
-36 to -72	An important negative impact which requires mitigation. The impact is insufficient by itself to prevent the implementation of the project but which in conjunction with other impacts may prevent its implementation. These impacts will usually result in negative medium to long-term effect on the social and/or natural environment	Minor (negative)
-73 to -108	A serious negative impact which may prevent the implementation of the project. These impacts would be considered by society as constituting a major and usually a long-term change to the (natural and/or social) environment and result in severe effects	Moderate (negative)
-109 to -147	A very serious negative impact which may be sufficient by itself to prevent implementation of the project. The impact may result in permanent change. Very often these impacts are immitigable and usually result in very severe effects	Major (negative)

The relationship between consequence, probability and significance ratings is graphically depicted in the figure below.

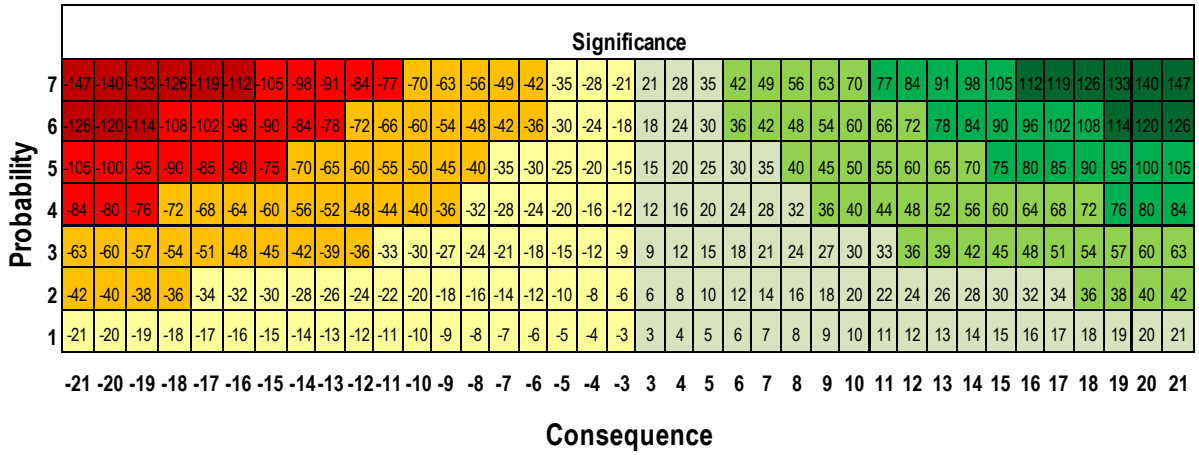


Figure 1: Relationship between consequence, probability and significance ratings

2.6 Mitigation measures and recommendations

Appropriate mitigation measures are recommended to avoid or ameliorate negative social impacts and to enhance positive ones. The criteria for the selection of mitigation measures included the following:

- That they should be effective in ameliorating the impact without having severe negative secondary consequences; and
- That they should be practically feasible and cost-effective.

After suitable mitigation measures were identified for each impact, the rating procedure described in Section 2.5 above was repeated to assess the expected consequence, probability and significance of each impact after mitigation. This post-mitigation rating gives an indication of the significance of residual impacts, while the difference between an impact's pre- and post-mitigation ratings represents the degree to which the recommended mitigation measures are expected to be effective in reducing or ameliorating that impact.

In addition to recommending mitigation and enhancement measures, the study makes general recommendations that could aid the successful implementation of the proposed project; these are given in Section 7.

2.7 Consideration of project alternatives

Current environmental legislation requires that practical project alternatives be considered during the impact assessment process. The pertinent project alternatives in the case of this project relevant to the current specialist study are as follows:

- The "no-go" alternative and alternative land uses on the project site;
- Mining methods;

- Mine plan and infrastructure layout alternatives; and
- Transport alternatives between Brakfontein and Kangala collieries.

These alternatives are described in greater detail in Section 3.5 below. The identification of impacts was based on a comparison of future socio-economic conditions, with and without the project (the “no-go” alternative). The differential impacts of alternative land uses of the project site are also considered, as is the manner in which the mine plan and infrastructure layout alternatives may change the predicted social impacts. Finally, the manner in which the transportation alternatives will alter the identified impacts and/ or their significance ratings is considered. The results of the comparison between alternatives are presented in Section 6.

3 PROJECT CONTEXT AND DESCRIPTION

The impact a proposed project will have on its receiving environment depends on the specifics of the project, including the location and size of its footprint, the timing of project activities, as well as the nature of these activities to name a few. An accurate representation of the proposed project is thus vital to the accurate identification and assessment of potential impacts.

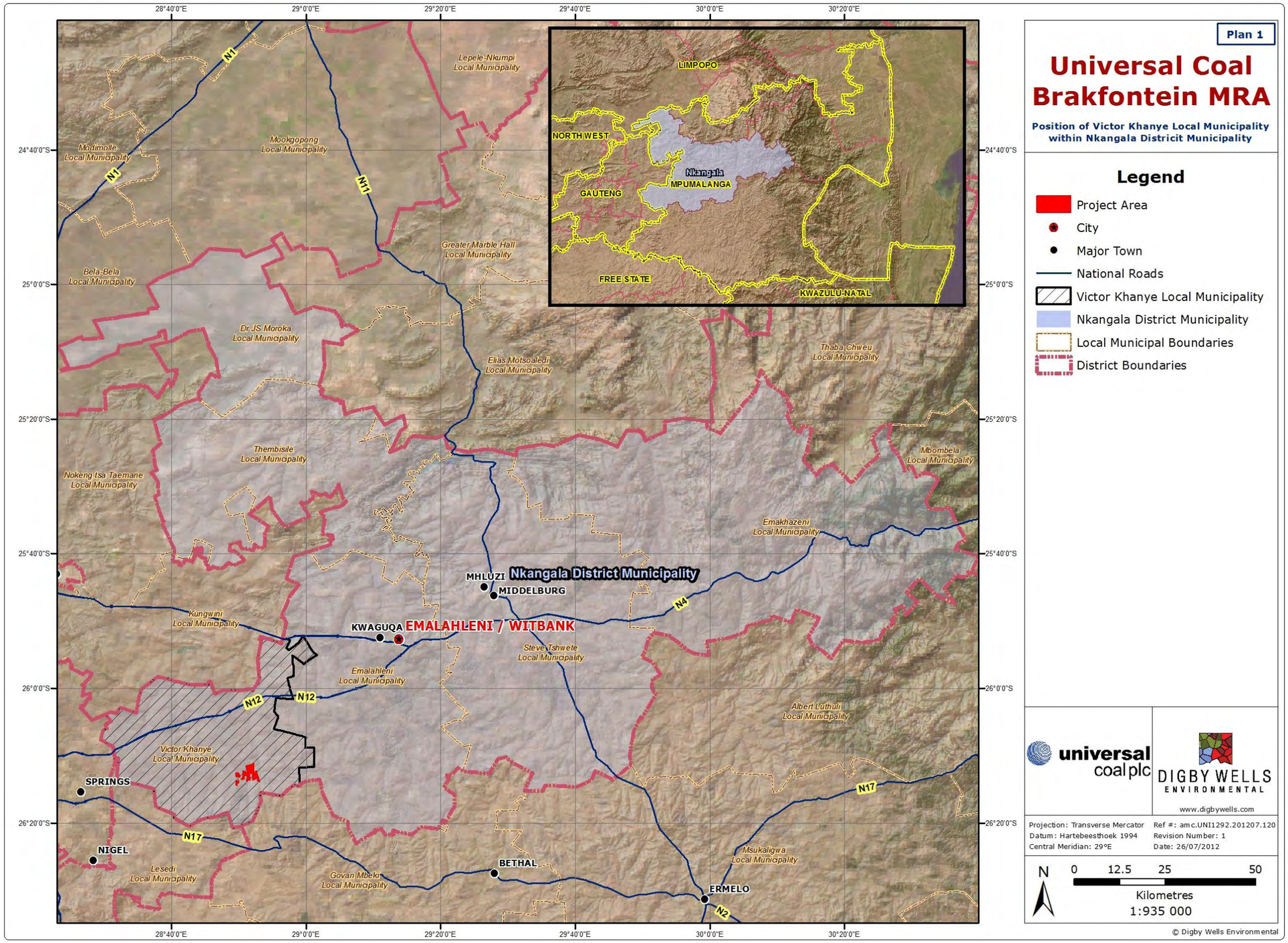
This section introduces the project and presents information pertaining to the regional setting of the proposed project site, motivation for the proposed project, as well as an overview of the project itself, including the mine layout plan, project timing, activities that will comprise each phase of the project, required infrastructure, the manner in which coal will be beneficiated, transport options and water requirements. Finally, project alternatives are considered, and workforce and expenditure forecasts are presented.

3.1 Project context

Universal Coal Plc has submitted a Mining Right Application to the Department of Mineral Resources (DMR) in November 2011 for proposed coal mining on Portions 6, 8, 9, 10, 20, 26, 30 and the Remaining Extent of the Farm Brakfontein 264 IR. The Prospecting Right for the proposed Brakfontein Project was granted to Unity Rocks Mining (Pty) Ltd on 10 July 2008. Universal Coal has entered into an agreement with Unity Rocks Mining and applied for an extension to the Prospecting Permit in July 2011.

3.2 Regional setting

The proposed project is located within the western margins of the Witbank Coalfields within the jurisdiction of the Victor Khanye Local Municipality, which is in Nkangala District Municipality in Mpumalanga Province (see Plan 3). The site is located approximately 16km north-east of Delmas town, 14km and 17km north of Devon and Leandra respectively. The centre co-ordinate of the largest part of the project area is located at 28°51'39.698"E and 26°12'31.237"S.



Plan 3: The regional setting of the proposed project

3.3 Motivation for the proposed project

Coal is one of the major primary energy sources in the world, principally because it is affordable to mine and large resources are available. In South Africa specifically, coal is the most abundant source of energy used for electricity generation. As South Africa's electricity utility, Eskom generates, transmits and distributes electricity to industrial, mining, commercial, agricultural and residential customers and redistributors. Eskom relies on coal fired power stations to produce approximately 95% of electricity used in South Africa, and uses over 90 million tons of coal per annum. Eskom is thus entirely dependent on the South African coal mining industry to supply it with coal. Coal mining in South Africa is relatively cheap compared to the rest of the world; these low costs have had an important effect on the nation's prosperity and potential for development.

Coal will have a major role in meeting future energy needs, and the demand for coal is set to continue for the foreseeable future. It is estimated that, over the next 30 years, the global energy demand will increase by almost 60%. Two thirds of this increase will come from developing countries, which will account for almost half of the global energy demand by 2030 (www.bp.com).

Changes in the global market are placing Eskom under increasing risk in terms of securing future supplies from the local market, in which the production capacity has not kept pace with increases in both local and international demand. It is critical that local production be facilitated to ensure long term security of supply for electricity production. Additional power stations and major power lines are being built to meet rising electricity demand in South Africa (Eskom Annual Report, 2008). Until such time as alternative sources of energy are successfully and affordably implemented, coal will remain the primary source in South Africa.

The proposed Brakfontein Coal Mine has a gross *in situ* resource of 78 million tonnes (mt) that can be classified as multi-product coal that would yield a significant portion of export steam coal. The anticipated life of mine (LoM) is close to 30 years.

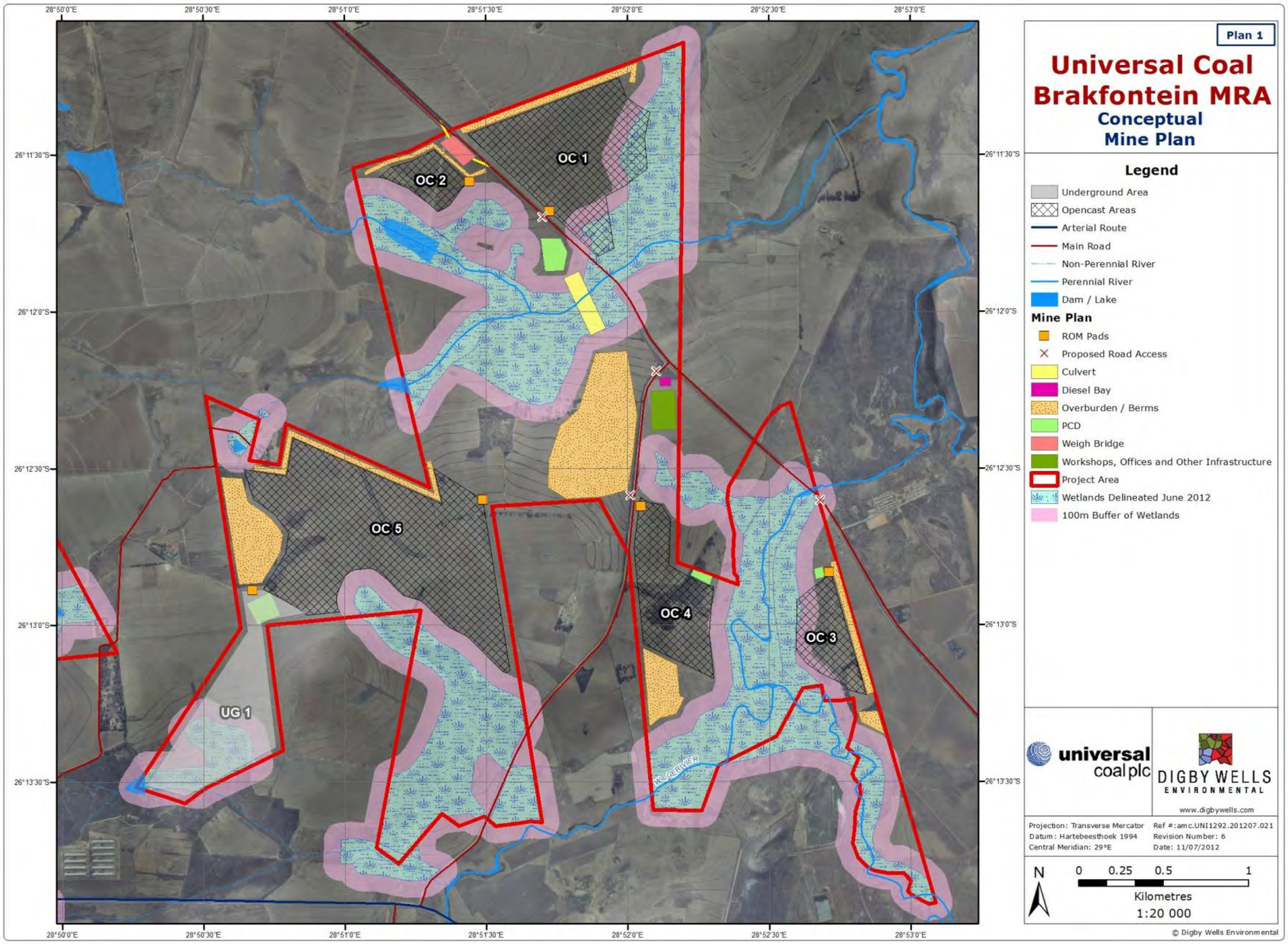
Benefits associated with the proposed Brakfontein Coal Mine project are as follows:

- Coal will be directly supplied to Eskom where it will be burnt to generate electricity to be distributed throughout Southern Africa. Due to increased development and demand for electricity, there is an ever-increasing need for coal mines to continue to produce coal for supply to Eskom;
- Approximately 235 direct employment opportunities will become available, in addition to indirect small-scale economic benefits and employment opportunities;
- Training will be provided to employees resulting in an improvement of the local skills base;
- By means of their SLP, the proponent will invest in social capital and promote sustainable LED in the surrounding areas;
- The local and national economy will be supported through the procurement of goods and services required by the mine; and

- The export of coal will contribute towards South Africa's foreign revenue, and is a means to generate export income.

3.4 Overview of the proposed project

The proposed Brakfontein Thermal Coal Mine project will be mined in two phases. Phase 1 will involve opencast mining, which will be undertaken during the continued exploration of the underground resources. Phase 2 will involve underground mining. The project site consists of five seams for open pit mining and one seam for underground mining (Plan 4).



Plan 4: Conceptual mine plan

3.4.1 Project timing

As mentioned under Section 3.3 above, the anticipated LoM is 30 years, which comprises 22 years of opencast mining (phase 1) and 8 years of underground mining (phase 2). This LoM is preceded by a construction period (as described below) of 12 months.

3.4.2 Activities per project phase

The following activities are envisioned for each of the project phases:

- Construction
  - Site clearing, including the removal of topsoil and vegetation;
  - Construction of surface infrastructure, including haul roads, pipes, storm water diversion beams;
  - Blasting and development of initial boxcut for mining, including stockpiling from initial boxcuts; and
  - Temporary storage of hazardous products, including fuel and explosives, as well as waste and sewage.
- Operation
  - Removal of overburden and backfilling where and when possible, including drilling and blasting of hard overburden and stockpiling;
  - Use and maintenance of haul roads for the transportation of coal to the washing plant at the Kangala Colliery;
  - Removal of coal and run-of-mine (ROM) coal stockpiling;
  - Water use and storage on-site;
  - Storage, handling and treatment of hazardous products (including fuel, explosives and oil) and waste; and
  - Concurrent replacement of overburden, topsoil and re-vegetation.
- Decommissioning
  - Demolition and removal of all infrastructure, including transporting materials off site;
  - Rehabilitation, including spreading of soil, re-vegetation and profiling or contouring;
  - Installation of post-closure water management infrastructure;
  - Environmental monitoring of decommissioning activities; and
  - Storage, handling and treatment of hazardous products (including fuel, explosives and oil) and waste.

- Post-closure
  - Post-closure monitoring and rehabilitation.

3.4.3 Mine infrastructure

The proposed project infrastructure (excluding infrastructure associated with the washing plant at the Kangala Colliery) includes the following:

- Offices and parking area;
- Sewerage treatment plant;
- Weighbridge;
- Mine equipment workshop and storeroom; and
- Washing bay facility.

3.4.4 Coal beneficiation

Brakfontein Colliery will supply 50mm crushed and screened ROM coal to the neighbouring Kangala Colliery (also a Universal Coal operation), which will, in turn, produce two coal products:

- C - grade steam coal for export purposes; and
- D - grade coal for Eskom.

A new coal preparation plant (for crushing and screening) will be constructed at Brakfontein Colliery. The ROM feed will be crushed to 50 mm or smaller and stockpiled on a plant feed stockpile before being transported to Kangala Colliery.

3.4.5 Water use and resources

It is expected that the water requirements for the Brakfontein project will be met by extracting water from boreholes to be sunk upon commencement of the proposed project. The Wilgerivier River passes through the Brakfontein farm and the possibility to extract water from the river is also being investigated.

Coal will only be crushed and screened on-site before being transported to Kangala for washing and processing. As such, on-site water usage will be minimal and primarily for dust control and potable use.

Dirty water separation and a stormwater drainage system will be required on-site, as well as a water storage facility if water is pumped out of the opencast pits.

3.5 Project alternatives

Two types of project alternatives are considered in this section:

- Alternatives *to* the project (in terms of the “no-go” option and alternative uses of the project area in the event that the project is not implemented; and

- Alternatives *involving* the project (in terms of alternative mining methods, infrastructure layout and transport routes to the project site).

3.5.1 The "no-go" option and land use alternatives

When considering the allocation of land for development and in deciding applications for planning permission affecting agricultural land, the agricultural implications must be considered together with the environmental, cultural and socio-economic aspects. In particular, prime quality land should normally be protected against permanent development or irreversible damage.

Consideration of land use alternatives is one of the cornerstones of community planning. Land use decisions must be evaluated in terms of sustainability, broadly defined as balancing environmental, economic and social equity concerns. The primary land use categories that encompass basic functions are residential, commercial, industrial, recreational, institutional and agricultural uses. Optimal land use is determined by a number of factors, including climate, resources, population growth, economic activity and topography. When considering a new development for an area, it is required that other land use alternatives are considered to ensure that the development is justified and viable.

Agriculture (primarily maize) is the dominant current land use on the proposed project site, with small areas being utilised for residential purposes. The dominant land use surrounding the project site is mining.

If not used for mining (the no-go option), possible alternative land uses for the project site include low cost housing, agriculture and grazing or eco-tourism. Given that mining is the dominant land use immediately surrounding the project site, however, the only viable alternative land use is agriculture combined with grazing. This land use alternative is also not necessarily precluded by the proposed project: after mine closure and rehabilitation of mined areas, the land capability may return to a state which would allow the continuation of agricultural practices.

Should the proposed project not be implemented, however, the continuation of agriculture (although economically viable,) may not provide the level of short-term economic growth to the area that mining would offer by means of the following:

- Direct and indirect employment opportunities for local community members;
- Promotion of sustainable LED, enhancing the skills base among local community members and thereby allowing for income generating activities not directly related to mining;
- Increased economic contribution to the area, enabling better development of the towns and surrounding areas; and
- Enhanced socio-economic stability in the area.

Moreover, not mining the coal reserves available on the Brakfontein farm will prevent the use of a coal reserve for the generation of electricity at a time where a much-publicised inability to generate enough electricity to sustain economic growth exists.

Further investigation regarding the impacts of each of the alternative land use activities will be undertaken in the EIA.

3.5.2 Mining method

The nature of the coal seams determines the preferred mining method and the location of coal deposits determines the location of the mining operation. These two factors limit available mining alternatives. The only possible alternative available in terms of mining methods will be the no-go alternative.

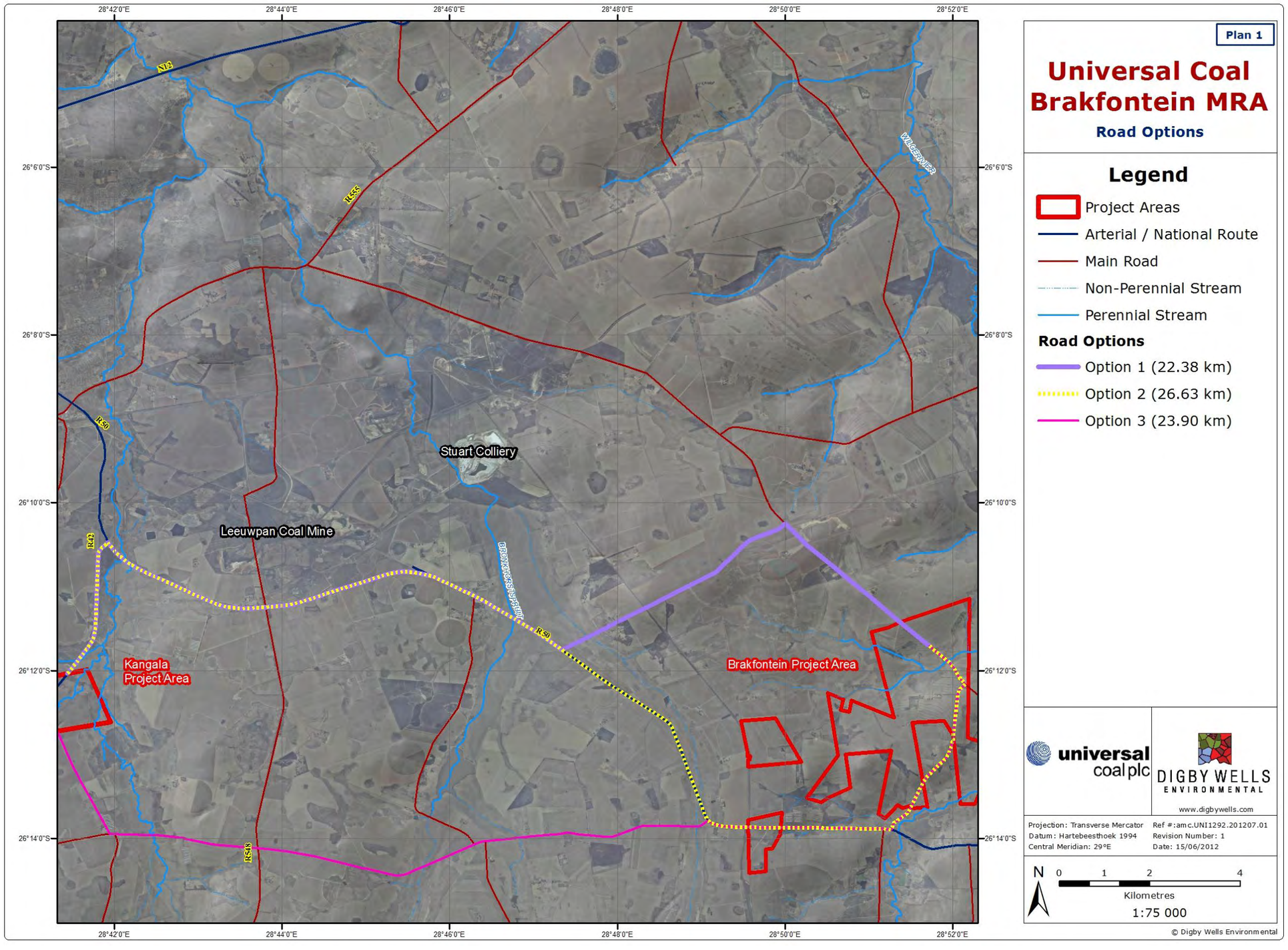
3.5.3 Mine plan and infrastructure layout

The current proposed mine layout (as shown in Plan 4) differs from the original plan, which was revised during the scoping phase of this project in order to reduce the impact on wetlands and on surrounding farm owners.

3.5.4 Transport routes

As mentioned previously, Brakfontein is approximately 80 km due east of Johannesburg and 16 km from the town of Delmas on the R50. The co-ordinate provided in Section 3.2 is just more than 2.5km from the tarred R50 road, thus minor changes and upgrades to this road is all that is required in order to link the proposed mine with Delmas and coal markets.

Three alternative routes for transporting coal from Brakfontein Colliery to Kangala Colliery are being investigated, as shown in Plan 5. The lengths of the alternatives vary between 22.4km and 26.6km. Option 1 follows tarred roads only, while roughly 3.5km of option 2 is located on gravel roads. Option 3 is situated almost exclusively along gravel roads. The relative impacts of each of these options on the social environment are considered in Section 6.



Plan 5: Route alternatives between Brakfontein and Kangala Collieries

3.6 Workforce and expenditure forecasts

This section provides information pertaining to the expected size of the workforce for the proposed project, and presents some figures proving insight into the operational expenditure. It should be noted that the figures quoted here are estimates only and have not been finalised; thus the actual employment and expenditure figures will only approximate the forecasted figures.

3.6.1 Workforce forecasts

According to the SLP for the proposed project, approximately 235 individuals will be employed by the project, the majority of which will be subcontractors (see Table 8). Of these 235 individuals, an estimated 77% will be male, 59% Africans, 30% White, 5% Coloured and 4% Indian. The project will endeavour to employ four disabled persons.

The majority of the workforce (69%) will consist of semi-skilled individuals, while only 14% of job opportunities will be available to unskilled individuals. The proponent has indicated that un- and semi-skilled positions will be filled by individuals from the local municipal area as far as possible. As such, the project workforce will not be accommodated on the project site thus no construction or operational camp will be required. Considering that the majority of labourers are expected to be sourced from the Delmas area, daily transport will likely be provided for labourers. It is likely that some semi- and most highly skilled individuals from outside the VKLM will be accommodated in existing facilities in the municipal area (such as guest houses), both during the construction and operational phases of the proposed project.

The expected educational levels of employees are shown in Table 9. This table shows that the majority of employees will have at least a Grade 12 or equivalent education (29% of the workforce). Combined, employees who have had only some secondary education or who have completed their secondary comprise 85% of the workforce, implying that these individuals will fill the un- and semi-skilled positions referred to above.

Table 8: Estimated workforce for the proposed project

Designation	Male				Female				Disabled		Total		
	African	Coloured	Indian	White	African	Coloured	Indian	White	Male	Female	Male	Female	All
Top management	1	0	0	2	0	0	0	1	0	0	3	1	4
Senior management	2	0	0	2	1	0	0	0	0	0	4	1	5
Middle management and professionally qualified and experienced specialists	2	0	0	1	2	1	1	2	0	0	3	6	9
Junior management, skilled technical and academically qualified workers, supervisors, foreman and superintendents	5	1	1	3	6	0	1	4	0	0	10	11	21
Semi-skilled and discretionary decision making	81	6	3	45	15	2	1	5	2	2	137	25	162
Unskilled and defined decision making	20	0	0	4	4	2	2	2	0	0	24	10	34
Total	111	7	4	57	28	5	5	14	2	2	181	54	235

Table 9: Expected educational levels of employees[1]

Educational level	Male				Female				Total		
	African	Coloured	Indian	White	African	Coloured	Indian	White	Male	Female	All
Grade 9 / ABET4	30	0	0	5	5	1	0	3	35	9	44
Grade 10 / N1	10	0	0	4	5	2	2	2	14	11	25
Grade 11 / N2	38	1	2	10	7	0	1	0	51	8	59
Grade 12 / N3	20	4	2	30	5	1	1	5	56	12	68
Diplomas / Certificates	3	1	0	4	6	1	1	2	8	10	18
First degree / Higher diploma	9	1	0	5	0	0	0	2	15	2	17
Total	110	7	4	58	28	5	5	14	179	52	231

[1] This table excludes the educational levels of the four disabled persons the project will endeavor to employ

3.6.2 Expenditure forecasts

The expenditure forecasts presented in this section have been adapted from the financial information provided in the Mining Work Programme submitted by Universal Coal for the proposed project to the DMR as part of the mining right application.

The estimated ***initial capital expenditure*** for the proposed project is in the region of R100 million over a two year period: R80 million for site establishment and R20 million for ancillary infrastructure and supporting services. At the time of writing the report, it is unknown which geographical area will benefit from this expenditure (local or district municipal areas, Mpumalanga province or beyond). However, the proponent has indicated a commitment to source as much as possible from the local or district municipalities. If the required goods and services are not available in these areas, it will be sourced from elsewhere in the country.

The estimated ***wages for mine employees*** (excluding subcontractors) at various levels are given in Table 10. It is noteworthy that semi-skilled individuals, many of whom will likely be sourced from the VKLM, will earn an estimated wage of R7 500 per month.

Table 10: Estimated wages for mine employees

Designation	Annual wage per employee	Monthly wage per employee
Top management	R 1 405 000	R 117 083
Senior management	R 732 500	R 61 042
Middle management and professionally qualified and experienced specialists	R 556 667	R 46 389
Semi-skilled and discretionary decision making	R 90 000	R 7 500
Total personnel expenditure	R 2 784 167	R 232 014

The estimated budget allocated for ***mining production and engineering subcontractors*** (including but not limited to wages and salaries) is just over R23 million for year one of the proposed project, and almost R17 million per annum for years two to 10 of the operation. The estimated budget allocated for ***crushing and screening subcontractors*** (also including but not limited to wages and salaries) is R2 325 000 for the first year of the proposed project, after which it will increase somewhat to R2 625 000 per annum for years two to 10.

The estimated annual budget for ***specialist service providers*** is given in Table 11 below; it shows that the total annual budget just exceeds R4 million.

Table 11: Estimated annual budget for service providers

Specialists, consultants and service providers	Annual budget
Laboratory	R 1 344 000
Survey	R 788 000
Geology	R 730 000
IT and communications	R 707 000
Human resources	R 458 000
Total	R 4 027 000

Other ***annual regulatory costs*** to be incurred by the proposed project include the payment of royalties (almost R5.4 million), rates and taxes (just more than R2 million), and a contribution towards the national skills fund (R600 000 per annum). A further R1 million will be spent annually in order to comply with mining health and safety regulations, and almost R1.9 million on occupational health.

The costs associated with the execution of the SLP are provided in Table 12 below. Over a ten year period, just over R1.4 million will be spent on Human Resource Development (HRD), R2.2 million on LED and just over R5.1 million on the management of downscaling and retrenchment. A total of almost R8.8 million has been assigned to the execution of the SLP for the first ten years of the proposed project.

Table 12: Estimated expenditure on the SLP

Year of project	Human resource development	Local economic development	Management of downscaling	Total
Year 1	R 75 000	R 70 000	R 91 500	R 236 500
Year 2	R 145 000	R 250 000	R 183 000	R 578 000
Year 3	R 100 000	R 410 000	R 274 500	R 784 500
Year 4	R 110 000	R 610 000	R 366 000	R 1 086 000
Year 5	R 160 000	R 610 000	R 457 500	R 1 227 500
Year 6	R 160 000	R 70 000	R 549 000	R 779 000
Year 7	R 160 000	R 70 000	R 650 500	R 880 500
Year 8	R 160 000	R 50 000	R 752 000	R 962 000
Year 9	R 175 000	R 50 000	R 853 500	R 1 078 500
Year 10	R 175 000	R 10 000	R 955 000	R 1 140 000
Total	R 1 420 000	R 2 200 000	R 5 132 500	R 8 752 500

4 BASELINE PROFILE OF THE AFFECTED ENVIRONMENT

The socio-economic baseline profile of the receiving social environment is presented in this section. The inclusion of this information is motivated by the fact that an understanding of the social environment is required in order to anticipate and understand the potential social impacts that may result from the proposed project.

The fire two subsections of the baseline profile focuses on the socio-economic characteristics of the study areas defined in Section 2.1 .The profile of the regional study area (VKLM) is set against the backdrop of the district municipality in which it is located – Nkangala District Municipality – in order to provide additional context to the study area. Next, other projects already operational in local municipal area is presented, after which there is an exposition of the attitudes towards and concerns regarding coal mining in general, and the proposed project in particular, as expressed by directly affected landowners and other stakeholders in the regional study area.

The information presented is largely based on the results of the 2001 Census (Statistics South Africa, 2001), which is supplemented by relevant information from other data sources such as the local and district municipalities' IDPs and the 2007 Community Survey. Both the qualitative data obtained through consultation with local stakeholders by means of interviews, and the data obtained during the investigative site visit have also been incorporated into this section.

4.1 Socio-economic baseline conditions of the regional and local study areas

This subsection presents the baseline profile of the regional (VKLM) and local (Wards 6 and 7 of VKLM) study areas, set against the backdrop of the Nkangala District Municipality. The following aspects of these study areas are discussed:

- Demographics, including population size, age and gender distributions, as well as ethnicity;
- Education and skills;
- Employment, including levels of employment and employment sectors;
- Economic conditions, including the trade, mining, agriculture and tourism sectors, in addition to economic development targets;
- Infrastructure and services, including housing, household energy, water, sanitation, transport, health, education, safety and security;
- Community needs and challenges; and
- Spatial development and land claims.

4.1.1 Demographic information

VKLM is one of six local municipalities in the Nkangala District Municipality. It is bordered by the Ekurhuleni Metropolitan Municipality to the west and is situated close to both the Johannesburg and Tshwane (Pretoria) Metropolitan Municipalities. The local municipality covers an area of roughly 1 570km^2, only slightly smaller than the Ekurhuleni Metropolitan Municipality covering just more than 1 900km^2.

The main urban areas within the local municipal area are Delmas, Eloff, Sundra and Botleng, all of which are located in close proximity to one another. Rural settlements in the VKLM include Brakfontein, Argent, Arbor, Dryden and Waaikraal.

The following subsections give an overview of the size, composition and age/ gender distribution of the municipality's population, with particular emphasis on Wards 6 and 7. Where appropriate, information on Nkangala District Municipality is provided for comparative purposes.

4.1.1.1 Population size

In 2007, an estimated 50 500 people resided in the VKLM, which is a 10% decrease from the estimated population in 2001 (Statistics South Africa, 2007). During the same period of time, the district municipality experienced about a 20% increase in population, mostly attributable to the Emalahleni Local Municipality whose population almost doubled (Statistics South Africa, 2007). Only 4% of the district municipality's population resides in the VKLM, translating into just more than 15 000 households.

The ward level population distribution of VKLM is shown in Figure 2 below. During 2001, about 18% of the local municipality's population resided in Ward 6, while another 20% resided in Ward 7. Taken together, these two wards therefore account for nearly 40% of the municipality's population (Statistics South Africa, 2001).

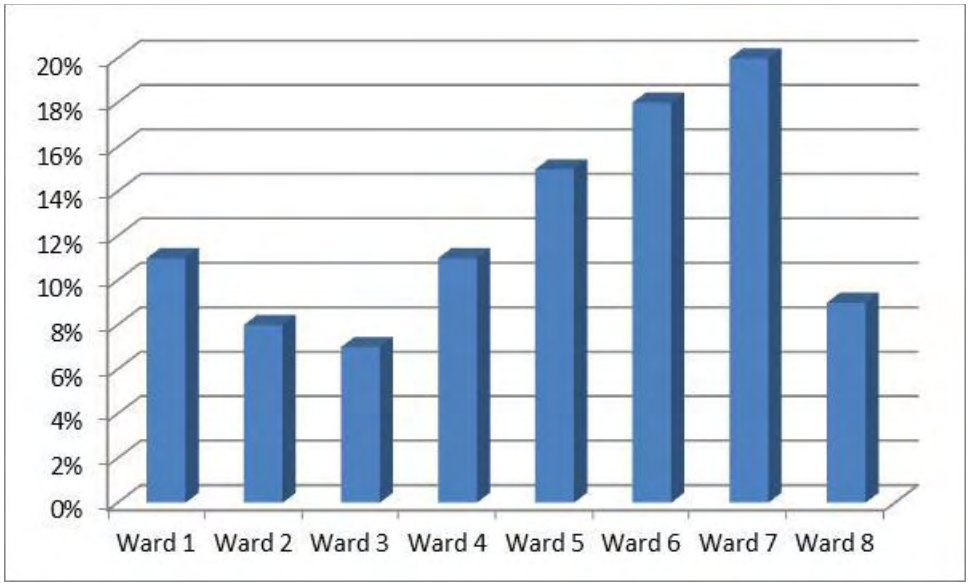


Figure 2: Ward level population distribution of the VKLM

4.1.1.2 Population composition

The population breakdown of the wards constituting the local study area, as well as of VKLM and the District Municipality as a whole, is given in Figure 3. As can be seen from this figure, Black Africans account for the vast majority (90% or more) of the study area. An exception to this trend is VKLM Ward 6, which has about a one-third White contingent. The size of the Indian and Coloured populations is negligible (Statistics South Africa, 2001).

The language distribution of the population in the study area is shown in Figure 4, which shows that isiNdebele and isiZulu are the most commonly-spoken languages in the study area. Again, VKLM Ward 6 is the exception to the rule, with an Afrikaans-speaking population of about 30%. The figure also shows that Zulu speakers are slightly more numerous in VKLM than in the rest of the District Municipality, while the latter has a larger Sepedi contingent.

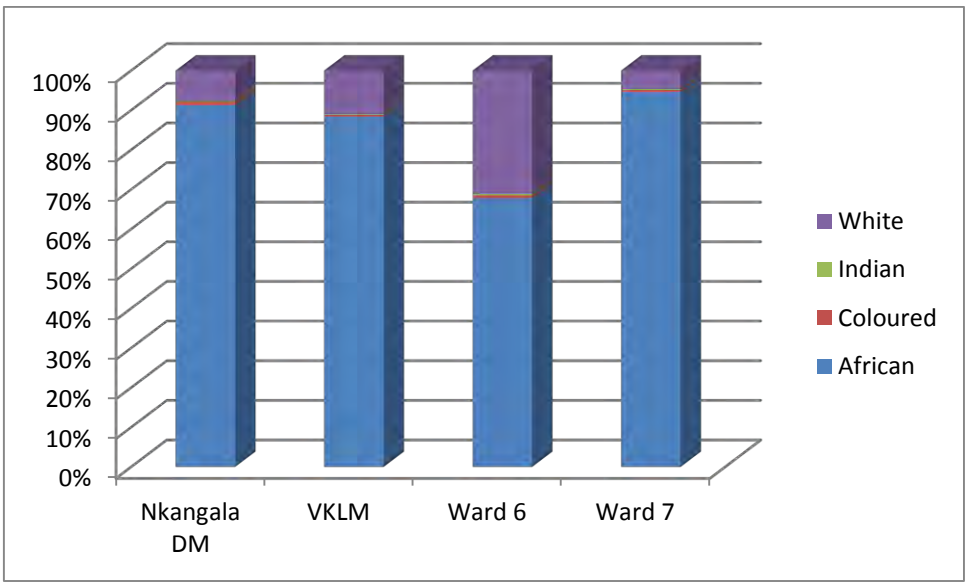


Figure 3: Population breakdown in the local and regional study areas

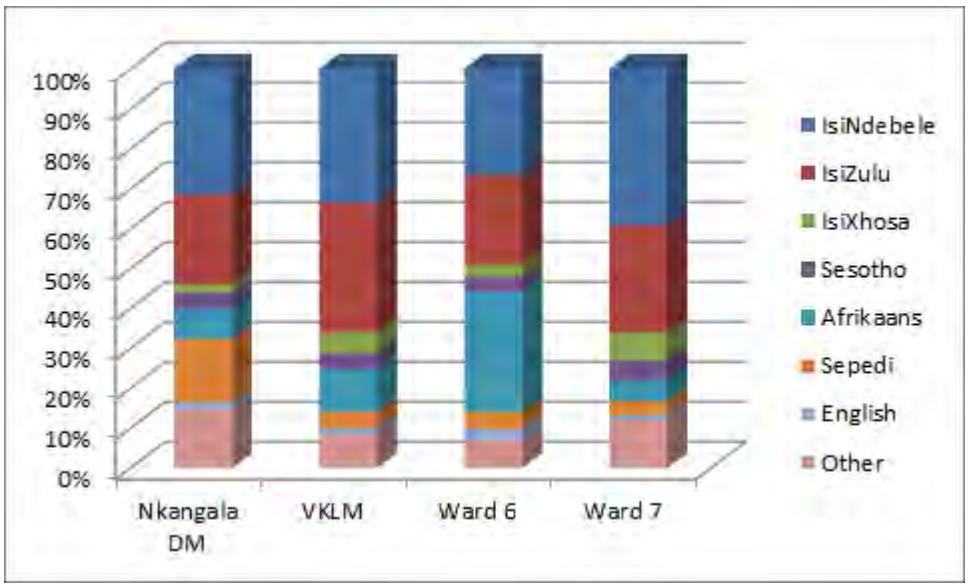


Figure 4: Language distribution

4.1.1.3 Age and gender distribution

The ratio of males to females in the local and regional study areas is very close to equal (Statistics South Africa, 2001). The age distributions among males and females are shown in Figure 5 below. The figure indicates that the study area has a relatively young population, with about one-third of individuals being under 15 years of age. No significant differences could be discerned between the different areas, except that VKLM Ward 6 had a slightly older population in 2001 (with only 29% of individuals being under 15) and Ward 7 had a slightly younger population (with 36% of individuals being under 15). These figures suggest

that there is thus a sufficiently large potential workforce in the local area to meet the needs of the project – provided that adequate skills are available. This question is revisited in Section 4.1.2 below.

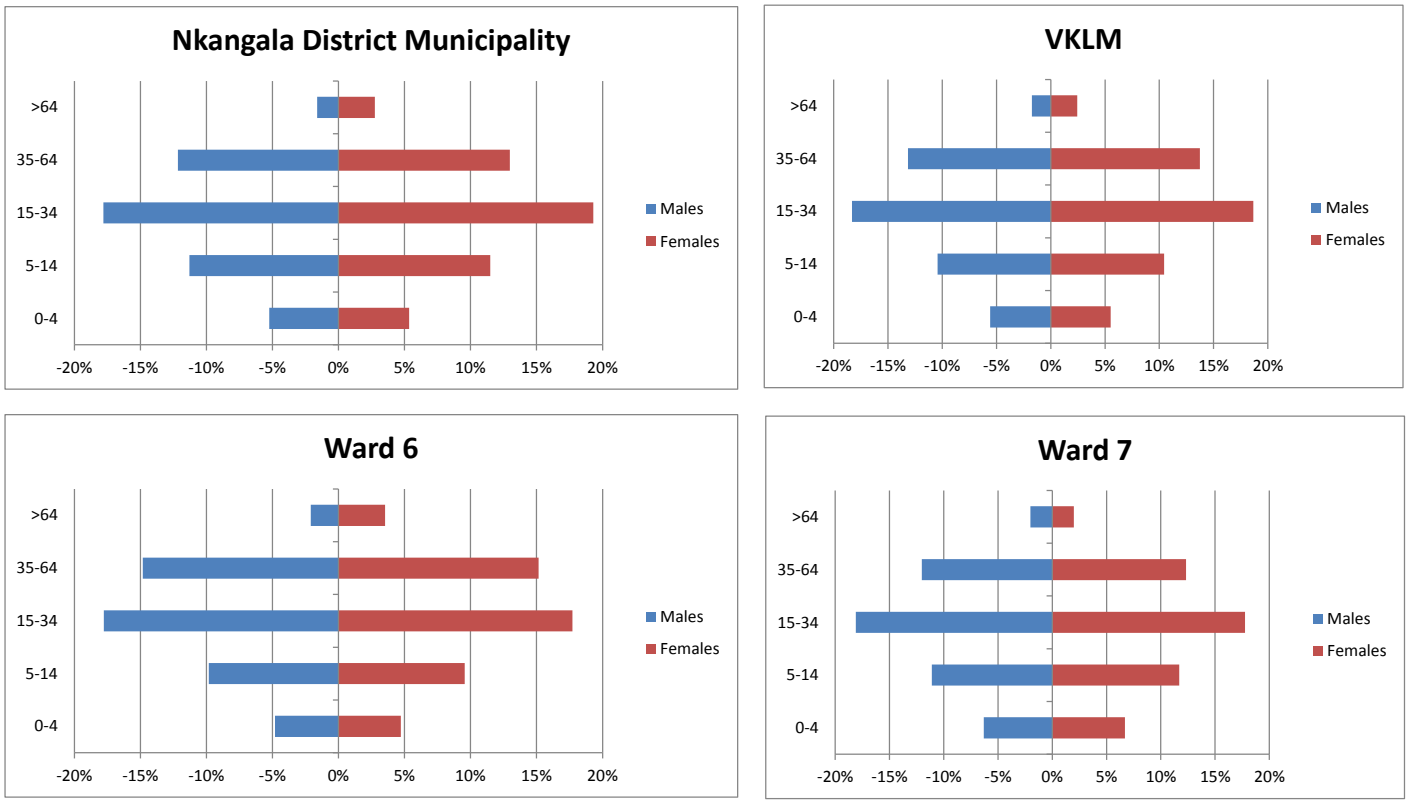


Figure 5: Age distributions in the study areas

4.1.2 Education and skills

As an indication of overall education levels in the study areas, the highest education attained by over-20 year olds in the local and district municipality (as recorded during the 2001 Census) are shown in Figure 6 below. It is clear from this figure that VKLM does not compare very favourably with the rest of the Nkangala District Municipality: just over one-quarter of adults in the district municipality had Grade 12 or higher education, while in VKLM, this figure drops to 19%. Education levels within the local municipality are unevenly spread, however. In the local study area, just over one-fifth of adults in Ward 6 have had no schooling; in Ward 7, this figure rises to over one-third. Stakeholders consulted for the purpose of this SIA indicated that there is a high level of illiteracy among the local municipal population, and that there is a significant lack of skills among the local populace.

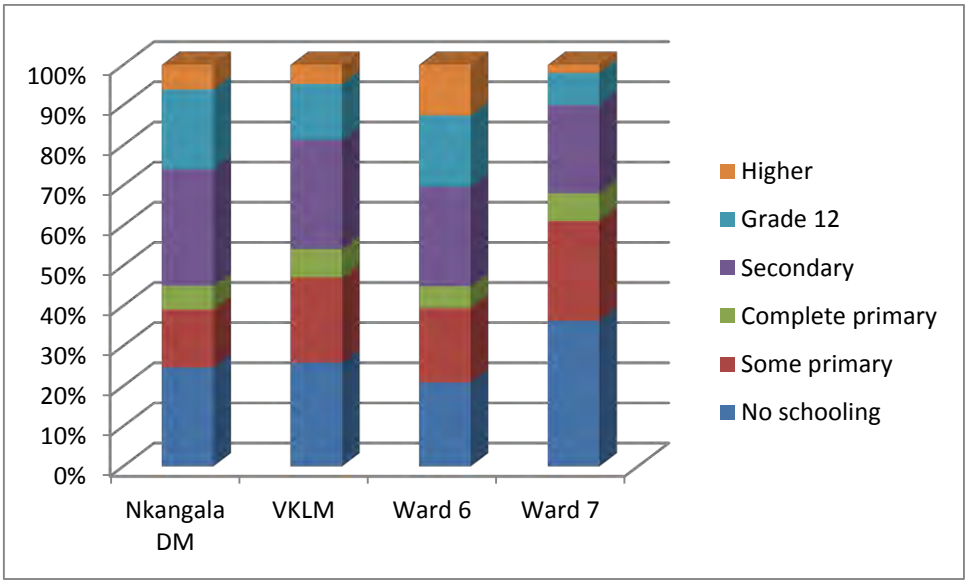


Figure 6: Highest education attained by over-20 year olds in 2001

The SDF of VKLM notes that capacity building and HRD has been highlighted in the Mpumalanga Province Growth and Development Strategy as one of five provincial flagship projects (VKLM, 2009). A specific objective of this project is to raise employment levels within the province and its local municipalities. Achieving higher education levels for VKLM's population is also a priority within the local municipality.

4.1.3 Employment

Employment-related information presented in this section pertains to levels of employment, household income and the economic sectors in which working individuals are employed.

4.1.3.1 Levels of employment

Unemployment is rife throughout the regional study area; according to 2001 Census statistics, it stood at 43% in VKLM and 44% in Nkangala District Municipality as a whole. The situation was only slightly better in the local study area, with unemployment rates of 33% and 36% in VKLM Wards 6 and 7, respectively. There are indications, however, that the situation has improved significantly in the last decade; at the time of the 2007 Community Survey, the VKLM IDP (IDP, 2011/2012) notes that unemployment in the local municipal area had dropped to 26%. However, stakeholders consulted as part of this SIA indicate that it remains a major problem within the local municipal area.

The low levels of education in the study area, which were noted in the previous subsection, are also reflected in the types of work done by those who are employed. In 2001, elementary occupations (those that consist of simple and routine tasks which mainly require the use of hand-held tools and often some physical effort) accounted for about one-third of jobs held by people in VKLM as a whole, and nearly 40% of jobs in Ward 7. Again, Ward 6 is an exception to the rule, with less than one-quarter of employed persons being in

elementary occupations. Professionals account for 7% of the workforce in this Ward, as opposed to 1% in Ward 7 and 3% in VKLM as a whole.

This situation has, however, also undergone some changes in recent years. By 2007 (according to the VLKM IDP, 2011/2012), the number of people in elementary occupations in VKLM had decreased to 22%, while the percentage of professionals had shown a marginal increase from 3% to 5%.

4.1.3.2 Household income

Employment rates and types of employment have a significant effect on income levels. The distribution of monthly household income in the study area (as recorded during the 2001 Census) is shown in Figure 7. As can be seen from this figure, there is a substantial number of households in VKLM Ward 6 that earn between R10 000 and R50 000 per month (at 2001 prices), while households in this income bracket are much less common Ward 7. In the latter, most households earned less than R1000 per month.

The average household income in Ward 7 in 2001 was just over R 3000 per month, which is almost exactly the same as the average household income in VKLM and Nkangala District Municipality as a whole. In Ward 6, by contrast, the average household earned R 5 500 per month.

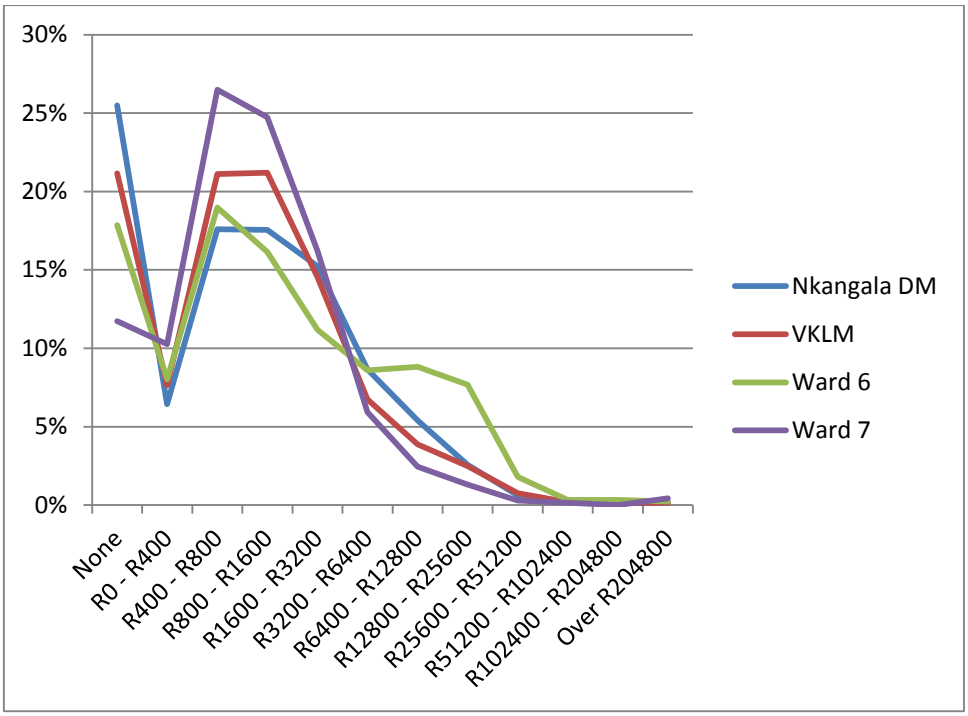


Figure 7: Distribution of monthly household income levels

4.1.3.3 Employment sectors

Among those members of the study area's population who are employed, the most common sources of employment are in the agricultural, community/ social/ personal services, wholesale/ retail, manufacturing and mining sectors (see Figure 8 for Census 2001 statistics). The relative contributions of the various economic sectors towards job creation were, however, undergoing certain changes. By the time of the 2007 Community Survey (Statistics South Africa, 2007), the percentage of jobs in the agricultural sector in VKLM had fallen from 27% to only 4%, while the manufacturing sector had grown from 13% to 20%. This change is indicative of steady industrialisation in the study area. The contribution of mining to job creation, on the other hand, had remained constant at about 9%, although stakeholders interviewed during the data collection for this SIA indicated that this has changed and that mining has become one of the biggest employers in the VKLM.

The main features of the study area's economy are discussed in greater detail in Section 4.1.4 below.

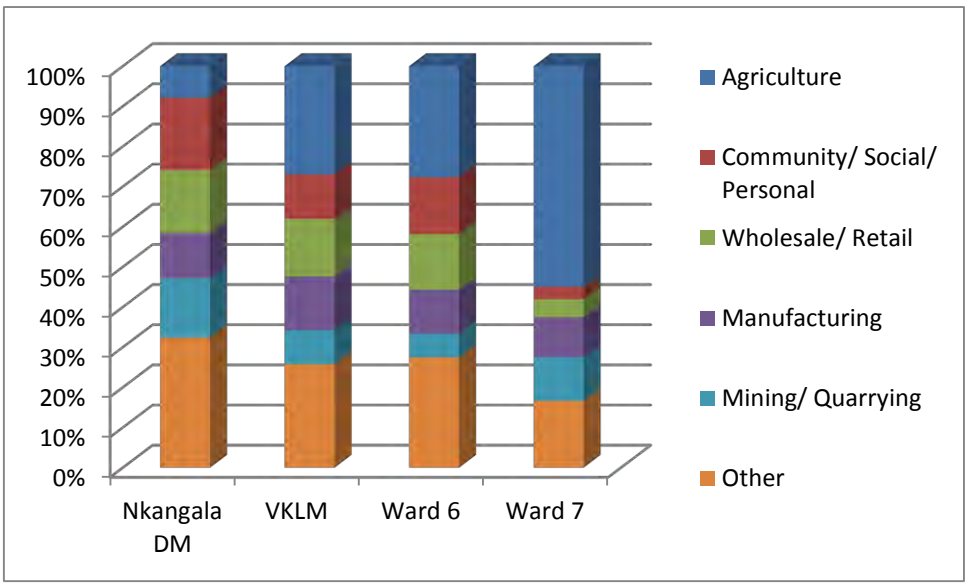


Figure 8: Sectoral employment in 2001

4.1.4 Economic overview

When viewed in terms of their relative contribution to the area's Gross Geographic Product (GGP) as opposed to job creation, a somewhat different picture of the local economy emerges from that described in the previous subsection. Those economic sectors that create the largest numbers of jobs are not necessarily those who contribute most to the economy, and vice versa. Furthermore, some sectors of the economy span several of the sectors used in the categorisation of jobs used above; tourism, for instance, encompasses employment sectors such as trade/ retail, personal services, construction and the like.

In terms of the strength of their contribution to the local economy, the most prominent economic sectors in VKLM are construction and trade, agriculture, mining and tourism. These are described in greater detail below, followed by a brief discussion of municipal economic development targets.

4.1.4.1 Construction and trade

According to the VKLM website (http://www.victorkhanyelm.gov.za), the construction and trade sectors are the largest economic contributors and are growing rapidly. This growth is mainly due to large construction projects (such as the construction of shopping centres). It is also likely the construction of mines and power plants contributes to the growth of the construction and trade sector.

4.1.4.2 Agriculture

According to the VLKM IDP (2011/2012), farming takes up approximately 60% of the local municipal land area. Its contribution to the local economy is also substantial, being the second largest contributor to VLKM's GGP (http://www.victorkhanyelm.gov.za). Maize is the dominant crop, with between 230,000 and 250,000 tonnes of this crop being produced annually (VKLM, 2009).

4.1.4.3 Mining

Mining was the third-largest contributor to the local municipal GGP, with the most prominent mining activities being coal and silica mining. Mining in the Witbank Coalfield started in 1889 and mining in the Delmas area started with Largo Colliery, now closed, approximately 25km southwest of the town of Delmas. According to the Universal Coal Geological and Resource Report (2009) the Witbank Coalfield is currently the most important coalfield in South Africa, supplying more than 50% of South Africa's coal sales. It supplies coal to both export and local markets and hosts most of the major coal-fired power stations in South Africa to which it supplies low grade coal.

4.1.4.4 Tourism

The Victor Khanye Local Municipality is the entry point for people travelling from Johannesburg and Pretoria into Mpumalanga or travelling through to Mozambique. As a result, many tourists travel through the local municipality on their way to other tourist destinations. The VKLM SDF (2009) defines one of the municipal development objectives to be that of branding Delmas as the '*gateway to Mpumalanga.*" Aspects of this branding exercise would include the establishment of a tourist information centre, which has been proposed at the Bronkhorstspruit turnoff from the N12 into Delmas Town.

The municipal area has a number of potential tourism opportunities such as the Bronkhorstspruit dam and pans attracting bird life, Ndebele Heritage sites, Voortrekker houses and caves.

4.1.4.5 Economic development targets

The LED plan for VKLM has aligned their development strategy with that of Nkangala District and Limpopo Province. The seven "pillars" of the economic development strategy for VKLM (VKLM, 2009) are as follows:

- Good governance and capacitation;
- Human resources and community development;
- Industrial and big business development
- Small, medium and micro enterprise (SMME) development and support;
- Agriculture development; and
- Tourism Development.

4.1.5 Infrastructure and services

Figure 9 below gives an overview of access to and utilisation of services in the local and regional study area, as reflected in Census 2001 statistics (Statistics South Africa, 2001). Five types of services are depicted in the figure:

- Housing (the figure showing the percentage of households in the district and local municipalities and the wards constituting the local study area who live in formal houses);
- Household energy (the figure showing the percentage of households who use electricity for lighting);
- Water (the figure showing the percentage of households who have running water in their dwelling or yard);
- Sanitation (the percentage of households who have flush toilets); and
- Transport (the percentage of persons who travel to work or school by car – either as driver or as passenger).

As can be seen from this figure, the provision of services within VKLM is fairly limited, with only about 60% of households living in formal houses, having access to electricity or water-borne sanitation. Access to water services is only slightly better, with about 70% of households having running water in their dwelling or yard. Furthermore, the provision of services within the municipality is highly uneven, as is reflected in the marked contrast between Wards 6 and 7. In almost all respects, the population of Ward 6 has much better access to services than that of Ward 7.

The state of these services is discussed in greater detail in the following subsections. This discussion is followed by an overview of the state of public service infrastructure related to health, education and policing in the local municipal area.

An important constraint on the provision of services is the refusal of beneficiaries to pay for those services. The VKLM IDP (2011/2012) identifies the non-payment of services by the

local community as a serious issue. It was estimated that at the time of developing the IDP approximately 42% of municipal households were not paying for services. It may, however, be argued that the refusal to pay for services is motivated by the poor quality of those services. VKLM has therefore made a commitment in the IDP to provide better quality services to households and communities within the local municipal area. In addition, however, given the low level of income among many of those resident in the VKLM, the inability to pay for such services is likely a major contributing factor to non-payment.

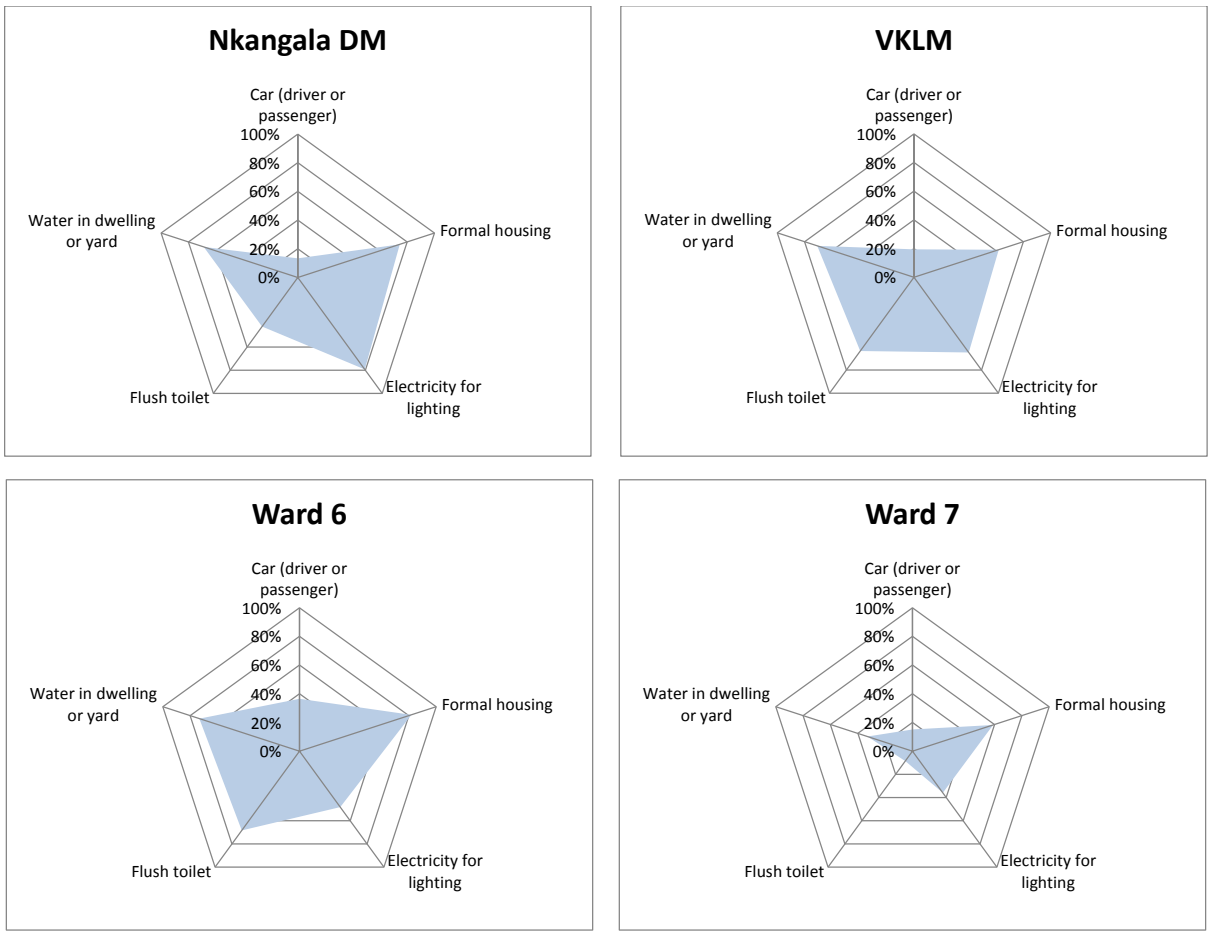


Figure 9: Access to services

4.1.5.1 Housing

The VKLM IDP (2011/2012) notes that the high prevalence and rapid growth of informal settlements, backyard shacks and squatter camps within the municipal area is a sign that housing delivery is not keeping pace with demand. According to the VKLM SDF (2009) there is an estimated housing backlog of approximately 5 000 units, the majority of which are located at Botleng Township. The IDP also notes that the high demand for housing is a combination of natural population growth as well as people moving into urban centres from surrounding farms and farming communities, most likely in search of employment opportunities. This was confirmed by stakeholders consulted as part of this SIA.

Steps being taken to alleviate this pressure include the development in Botleng Extension 5 (Delmas Town). However, the municipality's capacity to implement the necessary actions to address the backlog seems to be inadequate. For instance, of an allocation of 2 850 housing units that was made to VKLM between 1995 and 2008, only 974 units (34% of the allocation) had been completed by 2008.

4.1.5.2 Household energy

According to the VKLM SDF (2009), electricity supply is one of the main challenges within the municipal area: among urban households, only about 65% have access to electricity for lighting purposes, whilst most farm workers and rural residents do not have any access to electricity. The service delivery problem is further exacerbated by aging infrastructure which has not been maintained.

4.1.5.3 Water

The Water Services Development Plan for VKLM (2006) notes that approximately 70% of households have piped water in their dwelling or yard, although stakeholders consulted as for the purposes of this SIA indicated that the quality of piped water is poor. Those households who do not have access to running water in their homes are mostly situated in rural areas; water supply to such areas is often through "carting" or bringing water into the communities.

As part of efforts to address this challenge, the "Water for All" project has been adopted as one of five provincial flagship development projects. This project aims to provide water services provision to disadvantaged communities in line with their constitutional rights (VKLM, 2009).

4.1.5.4 Sanitation

As with water services, access to hygienic sanitation varies widely within VKLM. In rural areas such as Ward 7, the majority (70%) of households make use of pit latrines (Statistics South Africa, 2001), while about 12% of households do not have access to sanitation services at all, which was confirmed by stakeholders consulted as part of this SIA.

4.1.5.5 Transport network

There are a number of provincial roads running through the local municipal area. The main provincial roads within the study area are identified in the VKLM SDF (2009) as follows:

- R50 – links Tshwane and Standerton;
- R43 – connects Delmas to Bronkhorstspruit; and Delmas with Nigel;
- R555 – connecting Springs to Witbank; and
- R548 connecting Delmas to Balfour.

The connectivity between VKLM and other centres such as Johannesburg and Tshwane means that people can access the labour market outside the local municipality. The VKLM

SDF (2009) notes that these roads are generally in an acceptable condition, but that the R43 and R555 needed upgrading.

It was indicated in Figure 9 above that only about 20% of people in the local municipal area make use of private cars to travel to work or school. This implies heavy reliance on some form of public transport among the remainder of the population. According to the VKLM SDF (2009), however, public transport within the local municipality is a problem and people are commuting long distances to reach work.

4.1.5.6 Public services infrastructure

The states of three important public services are discussed below – namely, health, education and safety/ security:

- ***Health:*** There is one hospital within the local municipal area: the Bernice Samuel Hospital, also known as the Delmas Hospital, situated in Delmas Town. The original hospital building was built in 1944, but it has since been extended and has recently been renovated. There are currently 45 beds, 9 beds of which are for the maternity ward, 5 beds for neo-natal and the remaining beds are for the general ward. The hospital caters for between 4,000 and 8,000 patients in the out-patient departments. In addition to the Delmas Hospital, there are three public health clinics within the municipal area, each with professional nurses supported by community health workers. Each clinic attends to approximately 1,600 patients per month (Digby Wells Public Participation Report, 2009).
- ***Education:*** Like other public services, the provision of education within VKLM has not kept pace with demand. The VKLM IDP (2011/2012) identifies the high ratio of pupils to teachers, particularly within the township areas, as an area of concern. It also notes that schools in Botleng Extension 3 are over-crowded and the development of Botleng Extension 6 is expected to exacerbate the over-crowding at schools. One of the ways to alleviate this overcrowding is to bus learners to other schools in Botleng. The VKLM IDP also notes the need for institutions focussing on the development of mining and agricultural skills. Some such facilities exist (e.g. the Delmas Adult Education Centre located in Botleng), but these do not have the capacity to meet demand.
- ***Safety and security:*** According to the VKLM SDF (2009) there are three police stations within the municipal area; these are located in Delmas, Botleng and Sundra.

4.1.6 Community needs and challenges

A ward-level consultative process was undertaken as part of the development of the VKLM IDP (2011/2012) to identify the most pressing needs and challenges in communities. The results largely confirm the social statistics provided in the previous subsections, and may be summarised as follows:

- Challenges related to water and sanitation services:
  - Inadequate maintenance of water and sewerage infrastructure;
  - Backlog in water and sanitation services provision; and
  - Water supply to the community is frequently interrupted and sometimes for longer periods of time.
- Challenges related to housing:
  - Huge housing backlog;
  - Slow pace of finalisation of the municipal waiting lists;
  - Low quality of RDP houses and incomplete projects; and
  - Need for serviced stands.
- Crime:
  - High crime rate, especially house break-ins and theft;
  - Drugs and substance abuse is rife;
  - A lack of visible policing in rural areas; and
  - Electricity theft.
- Community development:
  - Social support initiatives (such as interventions aimed at child-headed households) sometimes fail to reach the targeted beneficiaries;[2] and
  - Need for agricultural assistance projects.
- Public services:
  - Shortage of education, health and recreational facilities;
  - Inaccessibility of health care facilities; and
  - Inaccessibility of education institutions.
- Transport:
  - Poor conditions of roads.

[2] This was confirmed by one of the stakeholders interviewed for the purposes of this SIA, who stated that the success of many community development projects are jeopardised by "hidden political agendas" held by, inter alia, municipal members.

4.1.7 Spatial development and land claims

The local municipality's SDF lists the following as objectives (VKLM, 2009):

- To optimally use the economic development potential associated with the N12 corridor in the vicinity of the R42 interchange;
- To allocate land for housing for different socio-economic groups in appropriate locations;
- To provide sufficient social facilities and services to all urban complexes in Delmas and rural areas;
- To promote the development of multi-purpose community centres in the Delmas area;
- To enhance the tourism potential of the Delmas area and achieve a sustainable equilibrium between the land demands of the mining industry, agriculture, conservation and tourism; and
- To promote the establishment of agri-processing industries associated with agricultural activities in the municipal area.

The SDF also identifies a number of projects the local municipality wishes to undertake. These are summarised in Table 13 below.

Table 13: Summary of spatial development projects to be undertaken in the VKLM

Area	Aspect	Proposal
VKLM in general	Development activity corridors	To economically develop the area between the N12 highway and the railway line in the same manner the Maputo development corridor and Gold Reef Bank (Benoni, Boksburg, Germiston and Johannesburg) were developed. The N12 development corridor links the aforementioned corridors.
		To establish an activity spine comprising mixed uses to the east of Botleng Extensions 3 and 4, as well as along Nelson Mandela Avenue.
	Economic activity nodes	To establish a business and retail centre at the N12-R42 interchange in order to serve the needs of the surrounding residential area, as well as travelers along the N12.
		To develop commercial and light industrial activity (including public services such as municipal offices), as well as a tourism gateway (including an information centre and restaurants) in the northern section of Farm Leeuwpoort, just south of the N12.
		To promote a linear development along the R555, and the optimization of the development potential at the R50-R555 interchange by expanding the existing industrial component at the interchange.
Victor Khanye, Botleng, Delpark and extensions	Residential	To consolidate the development structure of the town in a rectangular shape between the N12 in the north and the railway line in the south, by encouraging in-fill development or densification.
Eloff and surrounds	Residential	To extend the residential areas to primarily the east, but also north if required.
		To use the agricultural holdings for rural residential purposes
	Economic activities	To accommodate economic activities along the R555, railway line, and in the western part of Eloff township, partially by allowing business rights in the areas.
		To construct a multi-purpose centre on the western boundary of Eloff township.
Sundra, Sundale, Springs and Rietkol agricultural holdings	Residential	To develop rural residential areas on agricultural holdings.
	Economic activities	To promote business uses in the southern portion of the Springs Agricultural Holdings adjacent to the R555 and on other agricultural holdings at the east-west link road through the Rietkol Agricultural Holdings.
		To promote industrial and commercial uses in the southern parts of Spring Agricultural Holdings and on the Sundale Agricultural Holdings
Breswol Agricultural Holdings	Residential	To establish 600 to 1 000 residential erven (affordable housing).
		To develop supporting facilities required by a residential area, including business centres and schools.

According to the VKLM IDP (2011/2012) six land claims have been submitted within the local municipal area, none of which are within the project site, as shown in Figure 10.

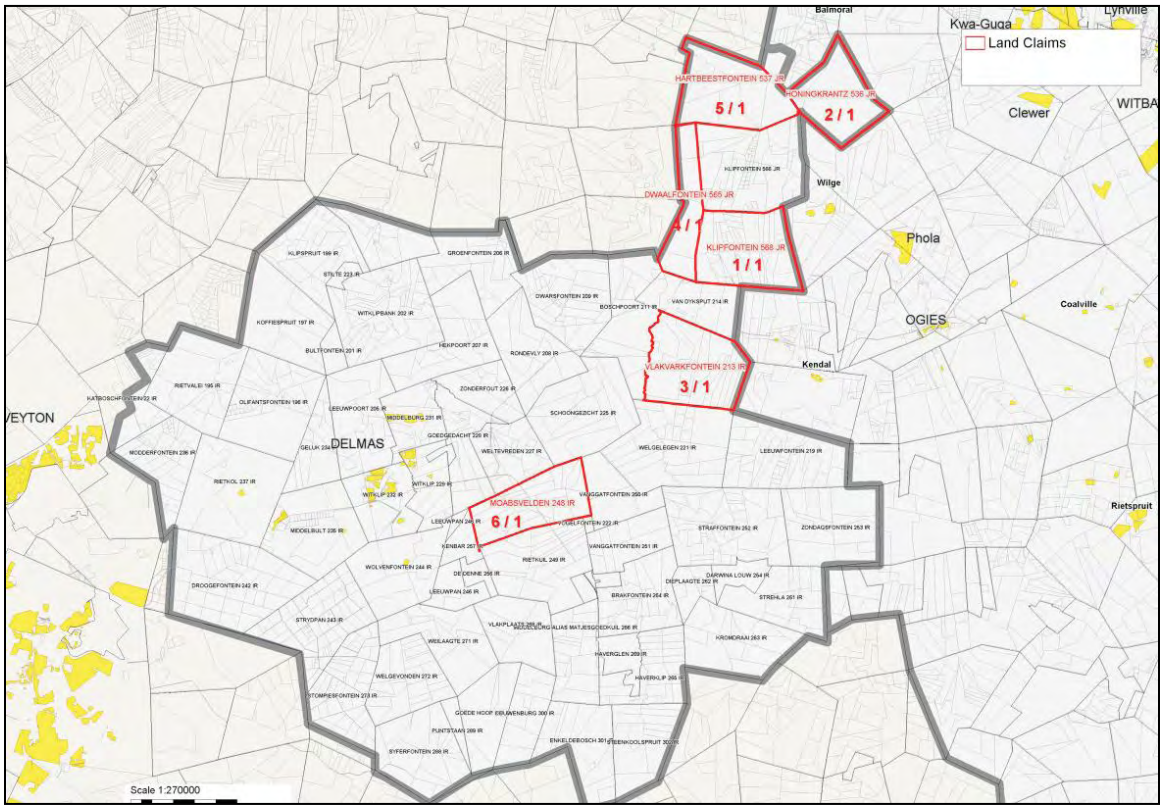


Figure 10: Land claims in the local municipal area

4.2 Site-specific conditions

This section focuses on the characteristics of the site-specific study area as defined in Section 2.1 – namely, the farm portions on which the proposed project footprint is located, as well as the farm portions located within 100m of the project footprint. It differs from the previous section in that it concentrates on the physical characteristics of the area relevant to the social environment (such as land use, and the location of settlements and businesses), as opposed to the socio-economic characteristics of the area (such as those described above). Knowledge of the physical characteristics is important as it will largely determine the significance of direct social impacts that may arise as a result of the proposed project, particularly those associated with the physical intrusion of project infrastructure and project-related activities.

The first subsection below considers land use, after which the physical characteristics are discussed.

4.2.1 Land use

Despite the presence of mining operations surrounding the project site (see Figure 11), the site-specific study area is also being used for agricultural (Figure 12), residential and business purposes. Of the total site-specific area, 64% is currently being used for agriculture, 28% for mining (a further 2% will likely be mined in the near future), 0.3% for a railway and 6% for residential, business and livestock husbandry purposes, notably chicken farming (see Table 14).

Table 14: Main land uses of farm portions comprising the site-specific study area

Classification	Affected	Farm	Portion	Total area (ha)	Percentage of total area
Agriculture	Directly Affected	Brakfontein 264 IR	9, 10, 26, 30, RE	440	8%
	Within 100m	Brakfontein 264 IR	4, 16, 22, 28, 29, RE	3128	56%
		Dieplaagte 262 IR	1, 2		
		Kromdraai 263 IR	1, 4		
		Middelburg alias Matjesgoedkuil 266 IR	3,4		
		Rietkuil 278 IR	RE		
		Vanggatfontein 251 IR	8, RE		
Mining	Directly Affected	Brakfontein 264 IR	6, 8	189	3%
	Within 100m	Brakfontein 264 IR	3, 5, 17,25, 27	1372	25%
		Dieplaagte 262 IR	5		
		Haverglen 269 IR	RE		
		Haverklip 265 IR	8		
Prospective mining	Directly Affected	Brakfontein 264 IR	20	59	1%
	Within 100m	Middelburg alias Matjesgoedkuil 266 IR	14, 18	59	1%
Railway line	Within 100m	Brakfontein 264 IR	31	18	0.3%
		Middelburg alias Matjesgoedkuil 266 IR	1, 20, 24, 25		
		Rietkuil 249 IR	24		
Residential/ business/ livestock	Within 100m	Brakfontein 264 IR	2, 11, 24	312	6%
Total area				5 577	100%

Figure 11: Evidence of mining in the site-specific study area

Figure 12: Evidence of agriculture in the site-specific study area

4.2.2 Physical characteristics

The physical characteristics are presented by means of a map of the area (Figure 13), accompanied by a table containing explanatory notes (Table 15) and photographs taken during the site visit (Figure 14 to Figure 25).

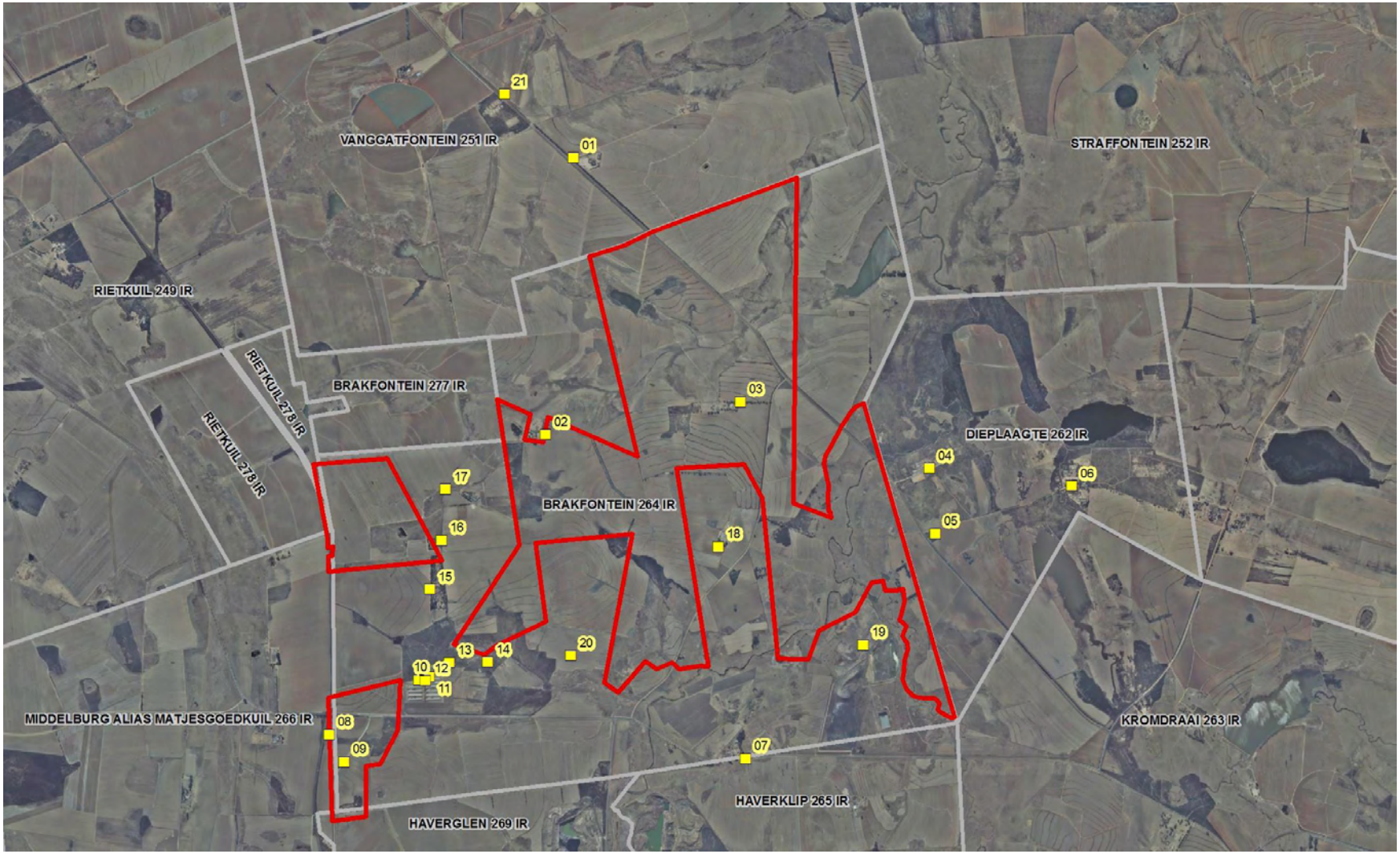


Figure 13: Prominent features in the site-specific study area

Table 15: Explanatory notes on prominent site- specific features

Number on map	Description
01	Formal permanent residence of land owner Frans Venter
02	Permanent residence of the farm manager for Frans Venter. Houses one family only. See Figure 14.
03	Permanent residence of farm workers working for Frans Venter. Consists of 3 housing units (housing approximately 30 people) and a storeroom. See Figure 15.
04	Mining compound. Previously used to house employees of Delmas Coal (approximately 10 years ago). Currently occupied by previous employees of Delmas Coal, as well as farm workers from the area. Consists of 21 housing units, approximately 80 rooms and other infrastructure (possibly a community hall). See Figure 16.
05	Dilapidated structure. No functional purpose. See Figure 17.
06	Formal residential settlement consisting of approximately 25 houses.
07	Formal permanent residence of land owner Hannes van Dyk. Includes café (no longer open for trade), livestock pens and farm worker accommodation (total of 5 workers). See Figure 18.
08	Single informal residence housing one family (presumably of a farm worker).
09	Informal settlement. Approximately 50 households. Unlikely to be farm workers or mine employees. See Figure 19.
10	Formal permanent residence of land and business owner Jan Moolman.
11	Temporary residence of18 farm workers. Most have permanent residence in Delmas. Workers include 2 security guards and a manager.
12	Brakchick chicken farm infrastructure belonging to Jan Moolman. Allegedly valued in the region of R30 million. See Figure 20.
13	Formal (albeit rundown) farm worker accommodation. Unknown number of people.
14	Dilapidated structures. No functional purpose.
15	Farm worker accommodation (presumably that of Pieter Combrink). Combination of formal, informal and traditional structures. Approximately 15 households. See Figure 21.
16	Formal residential structure of land owner Pieter Combrink (junior). Mr Combrink has allegedly moved into Delmas town and no longer resides at this residence. See Figure 22.
17	Formal permanent residential structure of land owner Pieter Combrink (senior). See Figure 23.
18	Formal permanent residential structure of land owner Johan Gericke. Including Brakfontein Meat Market, chicken farm infrastructure and arm worker accommodation (6 rooms housing a total of 6 people). See Figure 24.
19	Norwesco Mining. Operations allegedly ceased about around April 2012. No rehabilitation has taken place.
20	Active mining. Land owned by Confident Concept Pty Ltd.
21	Keaton Energy. Large scale active mining operation. See Figure 25.

Figure 14: Frans Venter's manager's permanent residence (number 2 in Figure 13)

Figure 15: Permanent residence of Frans Venter's workers (number 3 in Figure 13)

Figure 16: Mining compound (number 4 in Figure 13)

Figure 17: Dilapidated structure (number 5 in Figure 13)

Figure 18: Van Dyk permanent residence (number 7 in Figure 13)

Figure 19: Informal settlement (number 9 in Figure 13)

Figure 20: Brakchick infrastructure (number 12 in Figure 13)

Figure 21: Farm worker accommodation (number 15 in Figure 13)

Figure 22: Formal residence of Mr Combrink jnr (number 16 in Figure 13)

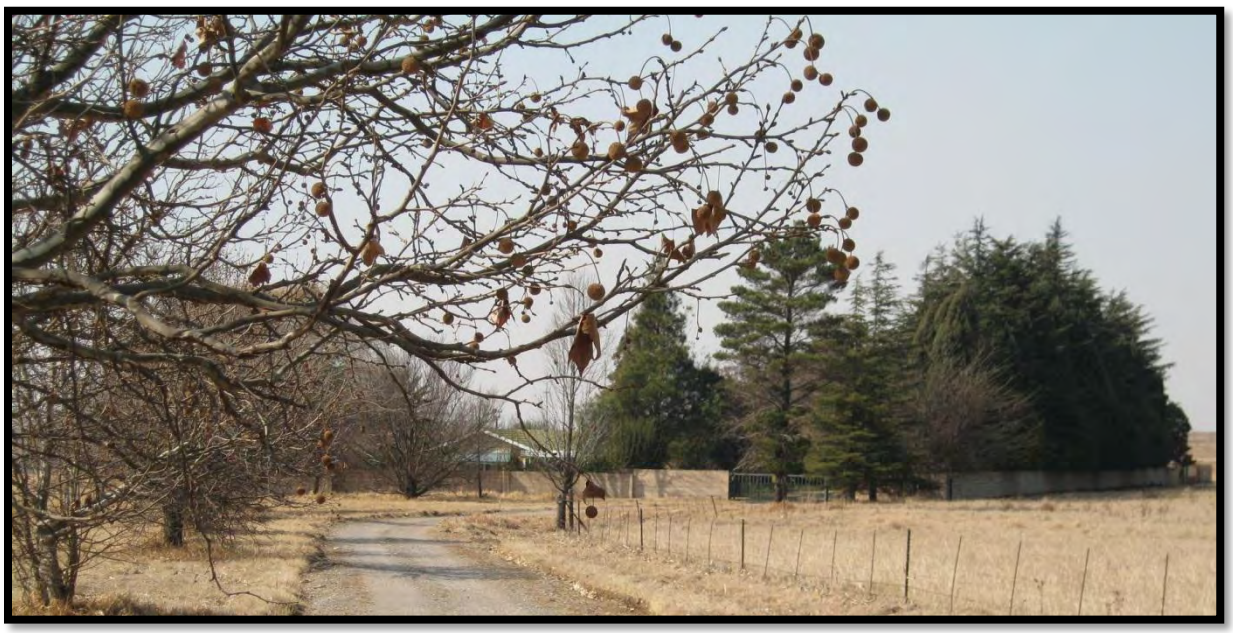


Figure 23: Formal residence of Mr Combrink snr (number 17 in Figure 13)

Figure 24: Brakfontein Meat Market (number 18 in Figure 13)

Figure 25: Keaton Energy mining activities (number 21 in Figure 13)

4.3 Other projects in the study area

The manner in which a proposed project will influence its receiving environment is influenced by the baseline conditions of that environment, which includes other proposed projects. Such projects, depending on their timing in relation to the project which is the subject of this SIA, may influence the manifestation and significance of social impacts that could result from the current project. As such, knowledge of such projects is required in order to accurately predict and rate social impacts.

As mentioned previously, there are other existing and operational coal mines within the defined study areas. The table below lists the mines in the VKLM and provides details about the LED projects being planned or implemented by each.[3]

Table 16: Other mines in the VKLM

Name of mine	Status	LED projects
Exxaro Coal	Existing	Preschool in Botleng – complete Hydroponics in Boschpoort – nearing completion Construction of 5 residential houses – planned Laundry project - planned
Vanggatfontein Keaton Energy	Existing	Vegetable garden in Botleng – complete Sewing project – planned Piggery project – planned
Umthombo Mine	Existing	None
Silicaquarz	Existing	None
Delmas Coal	Existing	Soya farming – complete Skills development - on-going
Stuart Coal	Existing	Unknown
BSM Coal	Existing	None
Shanduka Coal	Existing	Tourism development – in progress Skills development – in progress Laundry project – planned
Continental Mine	Existing	Essential oils - planned
Elloff Mine	At licensing stage	Rehabilitation of schools – planned Construction of technical school – planned Construction of multi-purpose centre – planned
Iyanga Welgenlegen Colliery	At licensing stage	Broiler production – planned Construction of market stalls - planned
Rietkuil Mine	At licensing stage	Construction of shell factories – planned Brickmaking project - planned

Due to the increase of mining activities within the local municipal area, the VKLM has proposed the establishment of a “mine and community desk”. The purpose of such a desk, envisioned to be located in Delmas, is twofold:

- To serve as a labour desk where job-seeking individuals can register and the mines can recruit from. Relevant service providers and other SMMEs will also be able to register at the desk; and
- To serve as the point of contact between the mines and communities – the mines will be able to use the desk, inter alia, to communicate information to the communities, and to communicate community grievances and questions received by the desk to the relevant mines.

[3] Information obtained from the VKLM, and is dated June 2011.

The "mine and community desk" is merely conceptual at the time of writing the report. It is an idea that reportedly originated from within the VKLM, but is dependent on the buy-in and support of mines within the local municipality to become operational. It is envisaged that an independent party will be appointed to operate the desk.

4.4 Attitudes towards and concerns regarding the proposed project

During the consultation process that took place for the purposes of this SIA, a variety of stakeholders were consulted (see Table 2). As stipulated in Section 2.2, one of the purposes of the consultation was to assess stakeholders' perceptions, concerns and expectations regarding the proposed project. This section presents the results of this assessment and is divided into two sub-sections: first, attitudes prevalent amongst the general populace and municipal representatives are presented, followed by the attitudes and concerns of the land owners surrounding the project site.

4.4.1 Attitudes and concerns of the general populace and municipality

Generally speaking, the local communities welcome mining projects as it represents and offers employment opportunities. As stated in Section 4.1.3.1, unemployment is rife in the local municipal area, thus any employment opportunity is welcomed into the area. There have been reports of mines employing labourers from outside the local municipal area, which has led to conflict between the local and migrant populations; reportedly, industrial action was instigated against the mines in the area during the first quarter of 2012 as a result of this practice. A municipal representative indicated that the communities' expectations are often unrealistic, and that these expectations should be carefully managed in order to avoid upset.

LED and other social development programmes initiated by mines in the local municipal area are allegedly not visible to the majority of local residents; apparently few people are benefitting from such programmes while the majority of people are not aware of programmes being implemented in VKLM. The municipal representative referred to above indicated that the local communities are becoming more and more aware of the obligations of mines towards the communities, thus mines should endeavour to clearly communicate and brand any social programmes they undertake in order to avoid false allegations that they are not contributing towards social development. In addition, there seems to be very limited synergy between the various mines operating in the area in this regard.

Access to graves located within the project footprint is another concern for the local communities. The consulting archaeologist for the proposed project identified at least six grave sites in the vicinity of the proposed project. Access to all of the sites will be altered as a result of the project. [4]

[4] This issue is addressed in the heritage impact assessment and will thus not be considered further in this study.

Finally, the physical displacement of people is a major concern for the local municipality, for two main reasons: firstly, there seems to be confusion regarding who should take responsibility for the resettlement of people affected by mining – apparently most mines deem it the responsibility of the land owner from which land was purchased, while the land owner believes that it is the responsibility of the mine. As neither party wants to assume responsibility, it often lands with the municipality, who has to make use of its own limited funds and resources to relocated the affected parties. The second reason resettlement is a concern for the VKLM, is that the municipality is running out of replacement land due to the fact that informal settlements are expanding and that there are large areas within the municipality unsuited for residential purposes because of its geological properties (dolomite).

4.4.2 Attitudes and concerns of affected land owners

The major attitudes and concerns raised by affected land owners can be categorised as follows:

- Attitudes toward mining in general;
- Concerns about excessive dust;
- Concerns regarding blasting and noise levels;
- Concerns relating to recruitment of mines workers;
- Concerns relating to high volumes of traffic; and
- Concerns pertaining to an increase of social pathologies as a result of influx precipitated by, inter alia, the presences of mines.

Each of these is discussed in more detail below.

4.4.2.1 Attitudes towards mining in the area

Land owners surrounding the project acknowledge that mining is becoming the dominant land use in the area and that such a change is inevitable. None of the stakeholders consulted are opposing the proposed project or mining in general, but state that when their time comes to leave the area, that they expect to receive fair compensation from the mine displacing them in order to establish themselves elsewhere and maintain the same quality of life they currently enjoy.

There is a prevailing perception that mining houses do as they please once they have been granted authorisation and that they care very little for the well-being of the surrounding land owners. Some stakeholders indicated that mines do not honour the conditions on which a mining right is granted and do not implement mitigation measures recommended by impact assessment studies. The result is a sense of powerlessness among some of the surrounding land owners who do not have the financial means to engage in legal proceedings with the mines.

The abovementioned shortcomings aside, stakeholders feel that the mining environment is an unpleasant one, and they wish to be removed from it. This feeling is exacerbated by the fact that rehabilitation of mines do not seem to occur, leaving the landscape clearly scarred.

4.4.2.2 Concerns regarding dust resulting from mining operations

Existing mining operations surrounding the project site have resulted in a lot of dust (see Figure 26), allegedly partly because they do not implement adequate dust suppression measures on the roads or at crushers sites due to the lack of sufficient quantities of water. Excessive dust has raised a number of concerns among stakeholders, and has impacted them in a variety of ways, as follows:

- Surrounding landowners are concerned about the health implications of poor air quality. One stakeholder indicated that his family constantly suffer from sinus problems, and believes this to be due to air pollution primarily caused by dust.
- Some farmers are unable to harvest crop from certain pieces of land as the crop is covered in black coal dust.
- Surrounding land owners are unable to hang their washing outside, enjoy *braais* outside, and have resorted to sealing their home's windows with sellotape.
- The owner of the Brakfontein Meat Market is concerned that the health inspector will close his butchery due to high levels of dust inside the butchery (as shown in Figure 26).

Figure 26: Evidence of dust as a result of mining activities

4.4.2.3 Concerns regarding blasting and noise levels

Blasting at mines is a frequent occurrence in the study area. Some blasts are allegedly "too big", resulting in a lot of dust, very high noise levels and severe vibrations. "Big blasts" are reportedly a cost-saving measure employed by some mines, as a larger area is blasted, thus requiring fewer blasts.

Blasting activity has a number of impacts on surrounding land owners, as follows:

- The vibrations caused by blasting increases the probability of houses and other farm infrastructure to crack. Mr Gericke, who is surrounded by mines (number 18 in Figure 13), has a seismograph on his property in order to monitor the vibrations caused by blasting. If the vibrations are higher than what is allowed, he reports it to the responsible mine, and has on at least one occasion, approached the DMR to resolve the problem. In the case of lower-income residential areas, the repair of cracked houses become the responsibility of the local municipality.
- Blasting allegedly impacts on the availability, quantity and quality of groundwater.[5] The surrounding land owners and businesses are heavily dependent on groundwater accessed by means of boreholes, especially the poultry farmers. Blasting has apparently led to the collapse of at least one borehole, resulting in the land owner having to sink another at his own expense. They yield of boreholes have also been affected by blasting, thus rendering a smaller quantity of water than before the arrival of the mines. Also, the quality of groundwater can be affected by blasting and other mining operations; in this regard, some of the mines in the area test the quality of groundwater used by a number of residents in the area on a monthly basis in order to monitor the effect of mining on the quality of water.
- The sudden loud noise from blasting has a devastating effect on the poultry farmers in the area, namely Mr Moolman and Mr Gericke (numbers 12 and 18 in Figure 13, respectively). A large number of chickens reportedly die of heart attaches as a result of the noise, representing a major financial implication for the business owners.

Mines allegedly do not adhere to the agreed blasting times, and thus blast whenever they require. There have been no reports of blasting outside of normal working hours, however, and stakeholders indicated that knowing when blasting will occur will not reduce the significance of the impacts resulting from it.

In addition to the noise generated by blasting, noise emanating from general mining operations also impacts on the quality of life of the surrounding land owners (as mining takes place 24 hours a day, they report a disruption of their sleep), and negatively influences the growth of chickens, which results in a financial impact for chicken farmers.

[5] This impact is quantitatively assessed in another specialist study forming part of the EIA for the proposed project.

4.4.2.4 Concerns relating to recruitment of mines workers

Some of the mines in the local municipality reportedly recruit day labourers from the gates at the mines. This has resulted in job-seekers staying in close proximity to the mines, and not in designated residential areas. This has contributed to the reported increase of social pathologies in the area (discussed in Section 4.4.2.6 below).

In addition, some farmers in the area have lost licensed drivers to the mines, as the mines generally pay a better wage than what farmers do. This has a significant financial implication on the farmers, as tractor drivers must have a Code 10 driver's license, which is an expensive licensing process.

4.4.2.5 Concerns relating to high volumes of traffic

As can be expected, there are high traffic volumes on the roads surrounding the project site, especially the R50. These roads are used by both private motorists and heavy motor vehicles (HMV) transporting coal. This, in combination with poor road maintenance, poses a significant safety risk to the surrounding land owners, and is also an inconvenience for them.

4.4.2.6 Concerns pertaining to an increase of social pathologies

Stakeholders reported that social pathologies have increased since the arrival of the mines, but acknowledge that these pathologies cannot solely be attributed to the mines, but also to the general trend of an influx of job-seekers into the VKLM. Specific pathologies mentioned by the stakeholders include crime, particularly stock theft and theft of farming equipment and infrastructure (particularly fencing poles and diesel) (also mentioned in Section 4.1.6), and prostitution. The incidence of veld fires has also increased.

5 IMPACT ASSESSMENT AND MITIGATION

The organisation and presentation of the full range of socio-economic impacts that are expected to arise because of a proposed project is challenging, for a number of reasons. First, potential impacts and the elements that combine to determine the socio-economic status of affected populations are multi-dimensional and interrelated. For example, insufficient access to services such as water, sanitation and healthcare is both a cause and an effect of poverty. On the one hand, the lack of access to such services impacts negatively on health status, the opportunity to acquire market-related skills and the amount of time available for productive activities; on the other hand, poor people are often forced to live in areas where service delivery is limited or absent. Thus, if a project increases the availability of services in an area, the ability of surrounding communities to take advantage of these services may to some extent depend on their current socio-economic status.

Second, the linkages between various potential project impacts are complex and can be mutually reinforcing. For example, in-migration and increased incomes can combine to put pressure on economies and infrastructure. Impacts may also have both positive and negative dimensions. For example, employment creation is an important project benefit, but it may also generate a context for negative impacts such as social conflict or excessive in-migration.

Finally, many socio-economic impacts cascade. For example, in-migration is itself an impact, but in turn may engender additional impacts, such as pressures on available services and natural resources.

Although it is necessary to keep the complexity of social impacts in mind, it is also necessary to produce an SIA report that will be accessible to a non-specialist audience and meet the requirements of the proponent. For this reason, predicted impacts have been categorised in terms of the project phase in which it is likely to originate (construction, operation or closure), recognising that many impacts will span over more than one project phase. Within each category, anticipated positive and negative impacts have been grouped together. This categorisation of impacts is shown in Table 17 and provides the structure for the remainder of this section.

Table 17: Summary of potential impacts

Impact category		Impact
Construction phase	Positive aspects	Job creation
		Multiplier effects on the local economy
		Increased markets for local entrepreneurs
	Negative aspects	Physical and economic displacement
		Conflict / competition between newcomers and the incumbent population
		Increased pressure on local services / resources
		Increased social pathologies
		Growth of informal settlements
		Safety impacts
		Decreased quality of life
		Loss of farm labour to the mine
Operational phase	Positive aspects	Job creation
		Community development and addressing community needs
	Negative aspects	Economic dependency on the project
		Opposition because of perceived negative impacts
Decommissioning	Positive aspect	Job creation during decommissioning

5.1 Construction phase

This section deals with the social impacts that will originate during the construction phase of the proposed project, although many of the identified impacts will continue beyond this phase. Predicted construction phase impacts include the following:

- Three positive impacts, namely job creation, multiplier effects on the local economy and increased markets for local entrepreneurs; and
- Eight negative impacts, namely physical and economic displacement, conflict or competition between newcomers and the incumbent population, increased pressure on local services and resources, increased social pathologies, growth of informal settlements, safety impacts, decreased quality of life and loss of farm labour to the mine.

These impacts are discussed in greater detail below, and appropriate mitigation measures are recommended to ameliorate negative impacts and enhance positive ones. Where relevant, the reader is referred to the appropriate specialist studies in which more comprehensive and quantitatively-orientated information is provided regarding aspects that contribute to the identified social impacts.

An additional impact that may be relevant to the construction phase of the proposed project (opposition because of perceived negative impacts) is discussed in Section 5.2 below. The inclusion of this impact under operational impact is motivated by the fact that, although it may also occur during the construction phase, it is more likely to occur during the operational phase of the proposed project.

5.1.1 Job creation during construction

Impact description

The baseline socio-economic profile presented in Section 4.1 indicates that some of the communities in both the local and regional study areas are characterised by poverty and underdevelopment. Notable socio-economic statistics include the following:

- A *high unemployment rate* – roughly a third of the economically active population in the local study area (Wards 6 and 7 of VKLM) are unemployed, compared to 44% in the regional study area (VKLM); and
- Very *low income levels* – particularly in Ward 7 of the VKLM, where most households earned less than R1 000 in 2001. Also, roughly one out of every five households in the VKLM does not earn an income.

These statistics indicate that the local and regional study area faces significant socio-economic challenges. The expectation and belief that mining projects bring local employment opportunities is an important reason that the communities welcome such projects, although it should be acknowledged that the expectation and demand for such opportunities almost always outweigh the available opportunities.

As mentioned in Section 3.4.1, the construction phase is anticipated to last for approximately 12 months (representing year 1 of the proposed project). Approximately 235 individuals will be employed during the construction phase, 162 of which will be semi-skilled and 34 unskilled (69% and 14% of the total construction workforce, respectively). The intention is to source as much of the unskilled and semi-skilled workforce from local study area, although given the lack of skills in the area (as reported in Section 4.1.2), the proponent may have to source individuals from other local municipalities. However, as indicated in Section 4.1.1.3, the demographic characteristics of the population in the local study area are such that there is a large potential workforce available.

In addition to creating job opportunities for construction workers, the project may also lead to *indirect employment creation* in the informal sector, for instance in terms of food stalls for the convenience of construction workers. Evidence from previous similar projects indicates that such temporary indirect employment does occur, albeit on small scale. However, considering the number of other mines in the area and the relatively small workforce required by the current project, it is likely that such services are already available and that the increase in the potential client base is too small to warrant additional services. In addition to the above though, more informal employment opportunities may be created through a multiplier effect from the project's activities (discussed in Section 5.1.2 below).

Recommended enhancement measures

Given that a number of vulnerable individuals will be physically displaced by the proposed project (discussed in Section 5.1.4 below), and that there are some settlements in close proximity to the project that will likely not be resettled (such as the mining compound) but will be significantly affected by the operation, these individuals should be given special

consideration in terms of the benefits arising from the project, including employment. However, attempts to benefit these individuals should not be to the detriment of farmers, who stand to lose employees to the mining industry. As such, the proponent should attempt to preferentially employ from the unemployed physically displaced individuals and individuals resident in nearby settlements. Such individuals could be identified with the help of the ward councillor. Mr Venter's workforce, in particular, deserves special consideration because they will not only be physically displaced, but also lose their employment as Mr Venter will almost certainly discontinue his farming activities in the area.

In addition to the above and in order to enhance the benefits of employment creation for other communities in the local study area, it is recommended that the following measures be implemented:

- Recruitment should be coordinated in conjunction with the local municipality located in Delmas (including ward councillors), as opposed to on-site (also see Section 5.1.7). The proposed "mine and community desk" (as described in Section 4.3) should facilitate the recruitment process if it is operational upon the commencement of the project. Otherwise, the VKLM labour desk should be utilised.
- Recruitment should take place using a registry of job-seekers and SMMEs, as opposed to lists of potential candidates and service providers compiled by an individual. This minimises the probability of nepotism or corruption to taint the recruitment process.
- If required, the local resident status of applicants should be verified in consultation with community representatives.
- In order to promote the creation of employment opportunities for women and youth, it is recommended that at least 10% of local employment opportunities be reserved for women and younger persons, respectively. (It is acknowledged that the SLP for the proposed project envisions that 18% of the un- and semiskilled positions will be filled by women.) The positions reserved for the youth and women may only be filled with persons outside of these categories if it can be demonstrated that no suitable persons are recorded in the skills registry to fill these positions. The performance indicator for the promotion of employment of women and youth would be the number of local women and persons under the age of 35 who are employed in the construction phase of the project.
- A monitoring system should be established to ensure that the subcontractors honour the specified employment policy.
- Where possible, labour-intensive construction and mining methods should be employed.

Impact rating

IMPACT DESCRIPTION: Job creation during construction				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	**Rating**	**Motivation**		
PRE-MITIGATION				
Duration	Medium term (3)	Equal to the duration of the construction phase	Consequence: Slightly beneficial (9)	Significance: Minor - positive (45)
Extent	Municipal Area (4)	Many positions will be filled by persons living in the VKLM, some from the district municipal area and elsewhere in SA		
Intensity x type of impact	Low - positive (2)	Only 196 employment opportunities will be available for un- and semi-skilled individuals		
Probability	Likely (5)	Without appropriate mitigation, forecasts of majority local recruitment might not be achieved		
MITIGATION: - Maximise & monitor local recruitment - Prevent nepotism/ corruption in local recruitment structures - Promote employment of women and youth - Use of labour-intensive construction and mining methods				
POST-MITIGATION				
Duration	Medium term (3)	As for pre-mitigation	Consequence: Moderately beneficial (10)	Significance: Minor - positive (60)
Extent	Municipal Area (4)	As for pre-mitigation		
Intensity x type of impact	Moderate - positive (3)	Mitigation will maximise local job creation		
Probability	Highly probable (6)	Mitigation will maximise probability that local recruitment targets are achieved and local benefits optimised		

5.1.2 Multiplier effects on local economy

Impact description

The expenditure forecast of the proposed project is provided in Section 3.6.2. Although the geographical location that will benefit from many of the expenditure items is unknown (such as the initial capital expenditure), some reasonable assumptions can be made, as follows:

- At least some of the mine employees' wages (totalling just more than R230 000 monthly) will be spent in the local and district municipal areas. This is expected to create substantial flows of revenue within surrounding communities, thus acting as a catalyst for change and growth in the local economy.
- Similarly, some individuals and businesses located in the local and district municipal areas will benefit from the estimated annual R25 million allocated to subcontractors during the first year of the project, and the almost R20 million annually for years two to 10 of the project. Also, if appropriate service providers are available in the local and district municipal areas, these areas will benefit from just more than R4 million annually allocated to such services. Such procurement spend will further enhance the economic impact of the project. The revenue accruing to these enterprises may produce sustained beneficial downstream impacts on the local economy.

- The municipality will benefit from an estimated R2 million annually for rates and taxes imposed on the mining proponent. Such an injection into the local municipality could contribute to the development of the municipal area, thereby creating conditions conducive to economic growth.
- Finally, the local municipal economy will benefit from the estimated R8.8 million to be spent on LED, HRD, and the management of downscaling. Both LED and HRD represent progress within the local municipality, thereby also creating conditions conducive to economic growth.

In addition to the above (and explain in Section 5.1.5 below), some of the construction workforce may be accommodated in existing infrastructure within the local municipal area, such as guest houses. This too will contribute positively towards the local economy.

As discussed in Section 4.3, there are a large number of other mining projects operational in the VKLM. The impact discussed above will therefore not occur in isolation, but will contribute to an existing trend of economic growth and diversification.

Recommended enhancement measures

The measures recommended above to maximise local employment through the project will also serve to maximise the positive impacts of the project on the local economy. In addition, the following measures are recommended to maximise this positive impact:

- If such a register does not exist at the labour desk of the local municipality, the proponent should consider developing a register of local SMMEs and the types of goods and services provided by them.
- When appointing subcontractors, the proponent should give preference first to appropriate subcontractors located in the local municipal area, the in the district municipal area, and then only to contractors located in Mpumalanga Province and beyond.
- The proponent should establish linkages with other mining proponents in the area involved in skills and SMME development, in order to enhance the effort to create suitable service providers within the local municipal area.
- Where appropriate SMMEs do not exist, the proponent should investigate the possibility of aligning the training/ skills development specified in the SLP with the lack of particular services and SMMEs in the local municipal area.

Impact rating

IMPACT DESCRIPTION: Multiplier effects on local economy				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	**Rating**	**Motivation**		
PRE-MITIGATION				
Duration	Project Life (5)	Equal to the duration of the project's lifespan	Consequence: Moderately beneficial (13)	Significance: Minor - positive (52)
Extent	Province/ Region (5)	Includes micro and macro-economic impacts		
Intensity x type of impact	Moderate - positive (3)	Will derive from increased cash flow from wages, local procurement, LED initiatives and fiscal impacts		
Probability	Probable (4)	Will depend on proportion of local spending by employees and availability local enterprises to supply required goods/ services		
MITIGATION: As for maximising employment benefits. Also: - Development of a register of local SMMEs - Linkages with skills development/ SMME development institutions - SMME skills development as part of SLP				
POST-MITIGATION				
Duration	Project Life (5)	As for pre-mitigation	Consequence: Highly beneficial (15)	Significance: Moderate - positive (90)
Extent	Province/ Region (5)	As for pre-mitigation		
Intensity x type of impact	High - positive (5)	Mitigation will maximise intensity		
Probability	Highly probable (6)	Mitigation will maximise probability that local recruitment targets are achieved and local benefits optimised		

5.1.3 Increased markets for local entrepreneurs

Impact description

The proposed project could possibly contribute to the acceleration of in-migration of job-seekers into the local and district municipal areas (discussed in Section 5.1.5 below). Although the social consequences of a population influx would be mostly negative, it will also have some positive effects on the local economy. SMMEs may experience improved markets and increased numbers of customers for consumable items they sell. This will particularly be the case if workers recruited from outside the VKLM represent higher-level occupations and have relatively high disposable incomes.

In addition, migrants can bring assets to the local economy, and skilled people who have previously out-migrated to seek work elsewhere but whose families are resident in the local area may return in the hope of employment at home.

The significance of this impact depends on the numbers and skills sets of migrants, as well as their family status. If the proposed project results in the in-migration of a relatively large number of skilled migrants whose families are already resident in the VKLM, the significance of this impact will be enhanced.

Recommended enhancement measures

The measures suggested in Section 5.1.2 to enhance the positive economic effects of the project may also help to increase the extent to which local entrepreneurs are able to benefit from the growth of new markets and customers.

Impact rating

IMPACT DESCRIPTION: Increased markets for local entrepreneurs				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	**Rating**	**Motivation**		
PRE-MITIGATION				
Duration	Project Life (5)	Will be most pronounced during construction phase, but will continue for the duration of the project	Consequence: Moderately beneficial (11)	Significance: Minor - positive (44)
Extent	Municipal Area (4)	Will benefit the VKLM		
Intensity x type of impact	Low - positive (2)	Will increase customer base for some local entrepreneurs		
Probability	Probable (4)	Will depend on numbers, skill sets, and family status of migrants		
MITIGATION: - As for enhancing multiplier effects on the local economy				
POST-MITIGATION				
Duration	Project Life (5)	As for pre-mitigation	Consequence: Moderately beneficial (12)	Significance: Minor - positive (60)
Extent	Municipal Area (4)	As for pre-mitigation		
Intensity x type of impact	Moderate - positive (3)	Mitigation measures will increase benefits for local communities		
Probability	Likely (5)	Mitigation will increase probability of benefits accruing to local entrepreneurs		

5.1.4 Physical and economic displacement

Impact description

As discussed in Section 4.2, the site-specific study area is currently used for purposes other than mining. Due to its nature and location, the proposed project will likely result in both physical displacement (where people or households have to be relocated to a different location to make way for project infrastructure) and economic displacement (where people lose access to cultivated land or other livelihood resources). Table 18 below details the extent of physical displacement, which has been subdivided according to directly affected settlements (those that fall within the project footprint), and settlements that fall within 500m of the footprint. This inclusion of the latter mentioned category is motivated by the fact that international best practice advocates clearing a buffer of 500m around any area where blasting will take place.

The table also indicates whether a displaced household is classified as economically vulnerable (in terms of the ability to re-establish itself elsewhere after being appropriately compensated during the acquisition of its property), and whether it should be included in the resettlement action plan (described below as the main mitigation measure for displacement).

It is acknowledged that the mine plan has not yet been finalised, and that the entire footprint area will not be subjected to blasting. Thus the numbers quoted in Table 18 should be considered the worst case scenario, which is the physical displacement of 171 households and 58 individuals.

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Table 18: Extent of physical displacement

Location	Number in Figure 13	Description	Approx. number of individuals / households	Vulnerable	Include in RAP	Comments
Within footprint	2	Permanent residence of Frans Venter's farm manager	1 household	Yes	Yes	-
	3	Permanent residence of Frans Venter's farm workers	30 individuals	Yes	Yes	-
	8	Informal residence	1 household	Yes	Yes	The current conceptual mine plan excludes mining of the two smaller footprint areas to the east of the larger area, thus may not be necessary to include in RAP
	9	Informal settlement	50 households	Yes	Yes	The current conceptual mine plan excludes mining of the two smaller footprint areas to the east of the larger area, thus may not be necessary to include in RAP
Within 500m of footprint	4	Mining compound	100 households	Yes	Yes	-
	10	Formal residence of Jan Moolman	1 household	No	No	-
	11	Temporary residence for workers	18 individuals	Yes	No	These workers have permanent residence in Delmas or another surrounding town. Staff turnover is high at Brackchick, thus workers have not necessarily lived at the temporary accommodation for an extended period of time
	13	Farm workers' accommodation	5 individuals	Yes	Yes	-
	15	Informal settlement of farm workers	15 households	Yes	Yes	-
	17	Permanent residence of Mr Pieter Combrink snr	1 household	No	No	-
	18	Permanent residence of Johan Gericke	1 household	No	No	Indicated that he would prefer to be moved from the area, and that his assets are replaced elsewhere, as opposed to being bought out.
	18	Workers residence	1 household and 5 individuals	Yes	Yes	-
Total			171 households, 58 individuals	168 households, 58 individuals	168 households, 40 individuals	

In addition to physical displacement, the proposed project will likely result in three cases of economic displacement, as follows:

- Mr Frans Venter, a prominent maize farmer, who will sell all his farm portions in the site-specific study area.
- Mr Johan Geriecke, who is the part-owner and manager of the Brakfontein Meat Market, and also a poultry farmer. The viability of the meat market is jeopardised by high levels of dust (as described in Section 4.4.2 and further consider in Section 5.1.10) and noise resulting from blasting will adversely affect his poultry farming. The meat market has a large and established client base, which may be adversely impacted on both as a result of mining activities and in the event that he is relocated.
- Mr Jan Moolman, owner of the Brakchick poultry farm. This business will not be viable in such close proximity to mining activities, largely due to blasting and the possible impact the project will have on water quality (see Section 5.1.10).

Recommended mitigation measures

In order to minimise the adverse impacts resulting from physical and economic displacement, the following is recommended:

- Prior to finalising the sales agreement of land (particularly in the case of Mr Venter), it should be clear who will assume responsibility for the resettlement of vulnerable households located on the property (as indicated in Table 18) – the land owner selling the land, or the mining proponent.
- If the mining proponent assumes responsibility for the physically displaced vulnerable households, a resettlement action plan (RAP) should be developed in consultation with the affected households.
- Prior to the development of the RAP, the proponent should finalise the mine layout plan and determine its policy and approach to resettlement. This will inform the extent of resettlement; particularly, it will determine if all dwellings and settlements within 500m (international best practice standard) of the project footprint or blasting areas will be resettled, or if a smaller exclusion zone (e.g. 300m) will be adopted.
- The physical and economic displacement of non-vulnerable households and individuals should be considered on a case-by-case basis. The proponent should negotiate a favourable solution with each physically displaced household, and the extent of economic displacement should be investigated by a suitably qualified professional. The proponent should seriously consider the recommendations made by such a professional and reach a favourable solution with each economically displaced individual.

Impact rating

IMPACT DESCRIPTION: Physical and economic displacement				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	**Rating**	**Motivation**		
PRE-MITIGATION				
Duration	Permanent (7)	Affected households and individuals will be permanently relocated	Consequence: Highly detrimental (-16)	Significance: Major - negative (-112)
Extent	Local (3)	Households and individuals in site-specific area will be affected, as well as those at the resettlement site (likely within VKLM)		
Intensity x type of impact	Very high - negative (-6)	Without proper compensation, it could have a devastating effect		
Probability	Certain (7)	Nature and location of project will inevitably result in displacement		
MITIGATION: - Determine party responsible for relocation - RAP development- - For non-vulnerable households and individuals, negotiate favourable outcome on a case-by-case basis				
POST-MITIGATION				
Duration	Permanent (7)	As for pre-mitigation	Consequence: Moderately detrimental (-12)	Significance: Moderate - negative (-84)
Extent	Local (3)	As for pre-mitigation		
Intensity x type of impact	Low - negative (-2)	Adequate mitigation will significantly reduce adverse effects of displacement		
Probability	Certain (7)	As for pre-mitigation		

5.1.5 Conflict/ competition between newcomers and incumbent population

As news regarding the proposed project spreads, expectations regarding possible employment opportunities may also take root. Consequently, the local study area may experience an influx of job-seekers. The magnitude of this impact will be influenced by the following factors:

- The severity of unemployment in the larger local and district municipal area, as well as the province as a whole, albeit to a lesser extent;
- The perceived likelihood of securing employment through the project; and
- The number of other existing projects in the area, which will contribute towards influx (thus the total influx into the municipal area cannot be solely attributed to the proposed project under consideration).

In terms of the first item listed above, it was mentioned in Section 4.1.3 above that poverty and unemployment are major challenges for the local and district municipalities. In terms of the second item, the scale of the project is relatively small and the number of workers to be employed is relatively limited (as reported in Section 3.6.1). However, it cannot be predicted whether perceptions regarding the attractiveness of the proposed project as a potential source of employment will be commensurate with reality; it is possible that unrealistic expectations may give rise to an influx of far more people than the project is able to accommodate. It is, however, more likely that the proposed project will not result in a

significant change in the rate of in-migration into the VKLM, given that mining is already a common land use within the local municipality (thus the proposed project will attract less attention that what it would have if it was the first mine in the area), and that there is already a steady rate of influx into the local municipality. Finally, in terms of the third item, the proposed project will be one of many mining operations in the area, thus any change in the rate of influx may not necessarily have been brought about by the commencement of the proposed project, and it would be near impossible to determine the proportion of influx attributable to the project.

The balance of the considerations outlined above is that, while the risk of an influx of job-seekers because of the project is relatively small, it cannot be discounted altogether. However, it should be considered in the context of steady, on-going, albeit small, influx into the study area as a result of other projects that have taken place over the past decade (see Section 4.3). Although the probability associated with the risk of influx as a result of the proposed project will probably peak during the early stages of construction, it could commence *prior* to construction, and could continue after construction has been completed.

In the event that some of the workforce are recruited from outside the local study area (for instance, to supply skills not available in the VKLM), their presence will constitute an *additional* influx of people. However, as mentioned in Section 3.6.1, these individuals will likely be accommodated in existing infrastructure within the local municipality, thus its impact may be more positive than negative (as discussed in Sections 5.1.2 and 5.1.3 above), save possible conflict between the incumbent and migrant populations (see Section 5.1.5 below).

It should be noted that both the nature and the magnitude of impacts associated with a population influx will depend on the numbers, skill sets, behaviours, employment expectations and family status of migrants. It will also depend on the response of people in the local study area – which, as mentioned in Section 4.4.1 above, is likely to be negative.

The influx of construction workers and job-seekers could hold a number of negative social consequences. One of these is conflict or competition between locals and newcomers, which is the topic of this section. Other impacts associated with a population influx include increased pressure on local infrastructure and services, an increase in social pathologies (including crime), and the growth of informal settlements. Each of these impacts is discussed separately in the following sections. **Impact description**

As mentioned previously, a proportion of the workforce for the project will be from the local municipal area, while the remainder will be sourced from outside the VKLM. It is possible that *conflict* might arise between the newcomers and local residents. One possible reason for such conflict would be the perception among locals that the outsiders are taking up jobs that could have gone to unemployed members of the local community. If any outsiders instigate sexual relationships with wives, daughters or girlfriends of locals, this would certainly exacerbate the problem. An influx of unemployed job-seekers could also add to the potential for conflict.

Stakeholders interviewed for the purposes of this study indicated that the local populace will likely react negatively (and even violently) towards migrant workers, especially if those workers fill positions that could have been filled from within the local municipality (also see Section 5.2.4).

Recommended mitigation measures

In order to mitigate this impact, the following measures are recommended:

- The recruitment policy used to employ people on the project must be fair, transparent and clearly communicated to the local population.
- The proponent must ensure that the intention of giving preferential employment to locals is clearly communicated, so as to discourage in influx of job-seekers from other areas, and to lay the foundations of a positive relationship with local residents.
- Local community structures (such as ward councillors) should be involved to assist with communicating the proponent's intention to give preference to local labour, and also to assist in identifying the local labour pool.

Impact rating

<table>
<tr><th colspan="5">IMPACT DESCRIPTION: Conflict/ competition between newcomers and incumbent population</th></tr>
<tr><td>Predicted for project phase:</td><td>Pre-construction</td><td>Construction</td><td>Operation</td><td>Decommissioning</td></tr>
<tr><td>Dimension</td><td>Rating</td><td colspan="3">Motivation</td></tr>
<tr><td colspan="5">PRE-MITIGATION</td></tr>
<tr><td>Duration</td><td>Medium term (3)</td><td>Could continue after construction is complete</td><td rowspan="3">Consequence: Moderately detrimental (-12)</td><td rowspan="4">Significance: Minor - negative (-72)</td></tr>
<tr><td>Extent</td><td>Municipal Area (4)</td><td>As potential labour sending area is far from project location, entire VKLM will be affected</td></tr>
<tr><td>Intensity x type of impact</td><td>High - negative (-5)</td><td>High unemployment in the area is likely to engender intense competition for jobs, and local populace has history of protest action</td></tr>
<tr><td>Probability</td><td>Highly probable (6)</td><td colspan="2">Very likely that some workers would have to be recruited from elsewhere</td></tr>
<tr><td colspan="5">MITIGATION:
- Clearly communicate local recruitment policy
- Use of community structures to identify local labour pool</td></tr>
<tr><td colspan="5">POST-MITIGATION</td></tr>
<tr><td>Duration</td><td>Medium term (3)</td><td>As for pre-mitigation</td><td rowspan="3">Consequence: Slightly detrimental (-9)</td><td rowspan="4">Significance: Minor - negative (-36)</td></tr>
<tr><td>Extent</td><td>Local (3)</td><td>As for pre-mitigation</td></tr>
<tr><td>Intensity x type of impact</td><td>Moderate - negative (-3)</td><td>Stringent enforcement of preferential local employment policy may reduce influx of job-seekers</td></tr>
<tr><td>Probability</td><td>Probable (4)</td><td colspan="2">Some workers would have to be recruited from elsewhere</td></tr>
</table>

5.1.6 Increased pressure on local services/ resources

Impact description

As indicated above, it is unlikely that the project will give rise to a substantial population influx – either of workers (because many of the workforce will be sourced locally) or of unemployed job-seekers (because only a portion of influx will be attributable to the proposed project under consideration given the large number of other mines in the local municipal area).

Nevertheless, migrant job-seekers will likely be attracted to the Botleng Township in VKLM. Thus, regardless of the source or reason of influx, there will likely be gradual additional pressure on local services and resources, especially housing, health facilities, the police force, educational facilities, sports facilities and water supply. The burden of supplying these services would fall on the local municipality, since the proponent cannot be held responsible for the needs of job-seekers migrating into the area.

There is some risk that the local municipality would not be able to supply these additional services. This risk derives from the fact (evident from the information provided in Section 4.1.5) that the municipality is already experiencing backlogs in the provision of services, especially housing. Additionally, water quality for domestic use is reportedly poor. The VKLM is currently attempting to address the issue of poor service provision.

Recommended mitigation measures

In order to address this impact, the following is recommended:

- That the proportion of job opportunities allocated to locals be maximised by means of the measures recommended in Section 5.1.1 above – thus reducing the need for outsiders.
- That the recommended measures specified in Section 5.1.5 above to discourage an influx of job-seekers be implemented.
- The local municipality should be informed well in advance of the anticipated timeframe of construction and of the nature and extent of any municipal services that might be required by the proposed project.

Impact rating

IMPACT DESCRIPTION: Increased pressure on local services/ resources				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	**Rating**	**Motivation**		
PRE-MITIGATION				
Duration	Medium term (3)	May continue after construction is complete	Consequence: Moderately detrimental (-11)	Significance: Minor - negative (-44)
Extent	Municipal Area (4)	Will affect local municipality		
Intensity x type of impact	Moderately high - negative (-4)	Municipality already experiences backlogs and difficulties with delivering services		
Probability	Probable (4)	It is unlikely that the project will be responsible for all influx, although it will contribute to the trend		
MITIGATION: As for maximising local employment and discouraging influx - Also, consultation with municipality well in advance				
POST-MITIGATION				
Duration	Medium term (3)	As for pre-mitigation	Consequence: Slightly detrimental (-9)	Significance: Negligible - negative (-27)
Extent	Municipal Area (4)	As for pre-mitigation		
Intensity x type of impact	Low - negative (-2)	The severity of impact can be reduced by means of adequate mitigation		
Probability	Unlikely (3)	Mitigation will further reduce likelihood of a population influx occurring		

5.1.7 Increased social pathologies

Impact description

An influx of job-seekers may lead to an increase in various social pathologies, particularly theft, the incidence of prostitution, and a resultant increase in sexually transmitted diseases (STDs) and HIV/ AIDS. As indicated in Section 4.4.2.6, such pathologies have increased since the arrival of mines in the area, and pose a concern to local land owners. As the proposed project will likely operate 24 hours a day during its operational phase (as the other mines in the area do), the likelihood of the aforementioned pathologies is increased.

An increase in social pathologies may be aggravated by the presence of a temporary (partially migrant) construction workforce. Although it is not envisaged that labourers will be housed in a construction camp, migrant workers undertaking a job away from home are still often cut off from their social and family networks. Being predominantly males, such workers are frequently prone to engage in promiscuous sexual activity, which can result in increases in STDs and in particular HIV among both the construction workers and their partners. Any employment recruitment that takes place on-site is also likely to exacerbate this impact.

Recommended mitigation measures

The following measures are recommended to address the aforementioned impacts:

- Measures to combat the spread of STDs (these measures also form part of the proponent's LED strategy, as discussed in Section 5.2.2 below):
  - Implement HIV/AIDS campaigns in the communities.
  - The proponent should make HIV/AIDS and STD awareness and prevention programmes a condition of contract for all subcontractors.
  - Align awareness campaigns with those of other organisations in the area, if any. These campaigns should use various common-practice methodologies in order to ensure social and cultural sensitivity.
  - The proponent or subcontractors should provide an adequate supply of free condoms to all workers. Condoms should be located at easily accessible locations, such as the construction office or communal areas that all workers have access to.
  - A voluntary counselling and testing (VCT) programme should be introduced during the construction phase and continued during operations. This should be undertaken in conjunction with the existing VCT programmes at local clinics (see Section 4.1.5.6).
  - The construction contractor should undertake a HIV/AIDS and STD prevalence survey amongst all workers on a regular basis (at least bi-annually). It should involve a voluntary test available to 100% of the workforce. The results of the survey will help to determine the HIV/AIDS and STD strategy. When and if statistically representative results are obtained the results of the survey should be made available to management and workers at the same time. Results should be presented in statistical terms so as to ensure confidentiality.
- Measures to address ***crime***:
  - Cease construction activities before nightfall;
  - No recruitment of labourers should take place on-site;
  - Construction workers should be clearly identifiable by wearing proper construction uniforms displaying the logo of the subcontractor. Construction workers could also be issued with identification tags.
  - The proponent should establish clear rules and regulations for access to the project site to control loitering. The proponent should consult with the local police service to establish standard operating procedures for the control and/or removal of loiterers.
  - Unsuccessful job-seekers should be encouraged to return to their place of origin and not remain in the local municipal area. This exercise should be undertaken in collaboration with the ward councillors and municipality.

Impact rating

IMPACT DESCRIPTION: Increased social pathologies				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	**Rating**	**Motivation**		
PRE-MITIGATION				
Duration	Project Life (5)	Will continue through the life of the operation	Consequence: Moderately detrimental (-13)	Significance: Moderate - negative (-78)
Extent	Municipal Area (4)	Will affect local municipality		
Intensity x type of impact	Moderately high - negative (-4)	Could severely affect well-being of communities and land owners, especially as cumulative impact combining with existing effects of other operations in the area		
Probability	Highly probable (6)	Area is already experiencing these problems		
MITIGATION: - Extensive HIV/ AIDS awareness campaign - Cease construction activities before nightfall - Clear identification of workers; prevention of loitering - Liaison with police - Do not recruit labourers on-site				
POST-MITIGATION				
Duration	Project Life (5)	As for pre-mitigation	Consequence: Moderately detrimental (-12)	Significance: Minor - negative (-48)
Extent	Municipal Area (4)	As for pre-mitigation		
Intensity x type of impact	Moderate - negative (-3)	Mitigation measures should be effective in reducing severity of impacts		
Probability	Probable (4)	Mitigation measures would reduce probability of impacts occurring to the extent predicted		

5.1.8 Growth of informal settlements

Impact description

It was mentioned earlier that there are a number of informal residences in both the site-specific and local study areas (see Sections 4.1.5.1 and 4.2.2), largely attributable to the VKLM's inability to keep up with the housing demand resulting from a steady influx of people into the local municipal area. Informal settlements, because of their lack of access to services such as water, sanitation and electricity, tend to be associated with a number of economic, social and health-related problems. If an influx of job-seekers and workers from elsewhere does occur because of the proposed project, this could contribute to the growth of such informal settlements, and possibly also the establishment of new ones.

Recommended mitigation measures

As mentioned in above, indications are that the VKLM has experienced a steady influx of people for a number of years. Also, given the number of other projects operational in the local municipal area, influx into the area cannot be solely attributed to the project under consideration in this SIA. As such, the mitigation measures recommended in Section 5.1.5 to discourage influx into the municipal area are deemed sufficient to address the potential impact of growth of informal settlements.

Impact rating

IMPACT DESCRIPTION: Growth of informal settlements				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	**Rating**	**Motivation**		
PRE-MITIGATION				
Duration	Long term (4)	Likely to extend into the operational phase	Consequence: Moderately detrimental (-13)	Significance: Minor - negative (-65)
Extent	Municipal Area (4)	Will affect low-income residential areas in VKLM, and becomes a local municipal issue		
Intensity x type of impact	High - negative (-5)	Will exacerbate existing negative social conditions		
Probability	Likely (5)	Growth of informal settlements already a problem, and existing housing backlog experienced		
MITIGATION: -As for conflict/ competition between newcomers and incumbent population				
POST-MITIGATION				
Duration	Long term (4)	As for pre-mitigation	Consequence: Moderately detrimental (-12)	Significance: Minor - negative (-48)
Extent	Municipal Area (4)	As for pre-mitigation		
Intensity x type of impact	Moderately high - negative (-4)	Mitigation could reduce the number of new informal settlements		
Probability	Probable (4)	Mitigation may reduce the likelihood of this impact occurring to the extent predicted, especially if there is collaboration with other operations in area		

5.1.9 Safety impacts

Impact description

Safety impacts could emanate from any of the following activities forming part of the proposed project (as discussed in Section 3.4.2);

- Construction sites (construction phase);
- Blasting (construction and operational phases);
- Stockpiling (construction and operational phases);
- Storage of hazardous products (construction, operational and decommissioning phases);
- Crushing plant (operational phase); and
- Transportation of coal via haul road (operational phase).

With regards to the ***construction site, stockpiles and crushing plant***, safety impacts emanate from the risk of non-mine workers wandering onto site and being exposed to the aforementioned sites without personal protective equipment (PPE) and knowledge of the dangers of these sites. In addition, these sites also pose a risk to the mine workers themselves, while performing their route employment duties.

The safety risks associated with ***blasting activities*** emanate from the improper use of explosives and fly-rock that may injure passers-by who are unaware of blasting activities.

The incorrect ***storage of hazardous products*** could have potentially fatal consequences as these could explode or seep into the ground, polluting groundwater used for domestic purposes. Also, access to such hazardous products by non-mine employees could be devastating to such individuals.

The ***transportation of coal via haul road***, sections of which is also used by private motorists, pose a risk to the motorists' safety due increased traffic volumes and the presence of HMVs on the roads. Also, the gradual deterioration of roads as a result of HMV also poses a safety risk for motorists.

It should be noted that in some instances, the social impact experienced may not necessarily be the actual increase of risk to one's safety, but the perceived increase of such a risk, which has the potential to have a debilitating effect on the psychological well-being of the local populace.

Recommended mitigation measures

The following measures are recommended to mitigate the potential impacts described above:

- Unauthorised access to all the project elements (specifically the construction site, stockpiles, crushing plant and storage facility for hazardous products) must be prevented through appropriate fencing and security to be erected/ established at the start of construction and maintained throughout the life of the proposed project.
- All mine employees should be issued with the appropriate PPE and educated regarding the risks involved in mining activities.
- Blasting should take place at designated times, and such times should be communicated to the surrounding land owners and local population. An effective manner for doing this is by the erection of signs (similar to road signs) on at least four corners of the project site indicating when blasting will take place. The proponent could also investigate the feasibility of a SMS service for surrounding land owners. Also, the size of blasts should adhere to the limits prescribed by the DMR in order to prevent fly-rock from travelling beyond the anticipated distances. Finally, no blasting should take place before the required relocation of households within the blasting buffer zone.

- The storage of hazardous products should adhere to the prescribed guidelines in order to minimise the probability of environmental damage and the accidental ignition of explosives.
- Regarding the transportation of coal:
  - Safe travelling speeds must be determined and measures implemented to ensure that these restrictions are enforced. Such measures may include monitoring vehicle speeds, erecting speed limit signs and installing speed humps.
  - HMV traffic should be restricted to daylight hours and the workweek if at all possible. Thus, it is recommended that trucks should not be operated after sunset (when driving conditions are dangerous) or over weekends (when the volume of private motorist traffic heavier).
  - Headlights of HMV should be on at all times, especially in misty conditions.
  - Roads must be adequately maintained to prevent deterioration of roads surfaces due to heavy vehicle traffic. Road maintenance should not be the sole responsibility of the VKLM or the Department of Public Works.
- Community education should take place as part of an on-going community engagement process and include the following:
  - A community awareness campaign to be implemented in the surrounding communities to sensitise community members to traffic safety risks and to the need to prevent children (and animals) from wandering into the project sites.
  - Activities undertaken as part of the awareness campaign and the education/ communication programme should be recorded and reflected in a formal progress report compiled on a quarterly basis.
  - Mechanisms must be established to ensure that problems are dealt with promptly. In this regard, it is recommended that a team of community liaison officers (CLOs) be appointed by the proponent. The CLOs should be local residents, as they will serve as points of contact between the community and the proponent; and
  - Feedback sessions should be arranged with community leaders and the proponent to assess the impact of this programme in terms of knowledge, attitudes and behaviour.

Impact rating

IMPACT DESCRIPTION: Safety impacts				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	**Rating**	**Motivation**		
PRE-MITIGATION				
Duration	Project Life (5)	Will continue for the duration of the project	Consequence: Moderately detrimental (-13)	Significance: Moderate - negative (-91)
Extent	Local (3)	Will primarily affect Ward 7 of VKLM		
Intensity x type of impact	High - negative (-5)	Could place the lives of community members at risk		
Probability	Certain (7)	The nature of the project requires the infrastructure and activities described, which hold an inherent risk		
MITIGATION: - Access control to all project elements, including fencing - PPE for mines workers - Notification of blasting activities - Blasting and storage of hazardous materials to adhere to prescribed regulations - Traffic control to prevent speeding - Road maintenance - Community education				
POST-MITIGATION				
Duration	Project Life (5)	As for pre-mitigation	Consequence: Moderately detrimental (-10)	Significance: Minor - negative (-50)
Extent	Local (3)	As for pre-mitigation		
Intensity x type of impact	Low - negative (-2)	Appropriate mitigation will reduce the risk of this impact		
Probability	Likely (5)	Appropriate mitigation will reduce the chance of impacts occurring		

5.1.10 Decreased quality of life

Impact description

The construction and operational phases of the proposed project will represent an intrusion into the surrounding physical environment, which could impact on surrounding communities in various ways, including the following:

- ***Visual impacts***: project infrastructure and stockpiles could affect the quality of the visual environment (such as the sites shown in Figure 11 and Figure 25) ;
- ***Acoustic impacts***: increased traffic, blasting and other mining activities, as well as activities at the crushing plant will increase noise in the area;
- ***Air quality and dust***: air quality could be affected by blasting activities and excessive dust resulting from mining activities and transporting of coal; and
- ***Water quantity and quality***: blasting and other mining activities could adversely impact on both the quantity and quality of available water in the areas surrounding the project site.

The quantitative assessment of these impacts is the subject of separate specialist studies and will not be repeated here except to stress that all these impacts will affect both the quality of life of people in surrounding communities as well as the viability of businesses (especially the Brakfontein Meat Market and Brakchick – also see Section 5.1.4), and should

therefore be viewed as constituting indirect social impacts. Such secondary social impacts may come about in the following ways:

- By affecting the area's ***sense of place***. "Sense of place" is a social phenomenon that refers to the identity and character of a landscape felt by local inhabitants, and often visitors. This attribute is derived from the natural environment and a mix of natural and cultural features in the landscape, and it usually includes the people who occupy the place. One of the factors to be borne in mind when assessing the potential magnitude of such an impact is the current state of the landscape: if it is currently relatively unspoilt, the impact of a large and conspicuous artificial structure and quarries on its sense of place will be correspondingly larger than if the landscape already bears the marks of development. Another factor is the meanings that people attach to the anticipated changes: if a development promises to offer tangible benefits to surrounding communities (in terms of job creation, etc.), it is unlikely that its impact on the character of the landscape will be perceived in a negative light – even if that impact is substantial from an aesthetic point of view. If the proposed project is evaluated against these criteria, it is evident that it will not produce a significant impact on the area's sense of place, except perhaps for the remaining land owners still resident in close proximity to the proposed project site. Although the project site is in close proximity to lower-income and informal residential areas (as describe in Section 4.2.2), these stakeholders are not concerned about a change in sense of place; instead, they expressed interest regarding how the communities will benefit from the proposed project.
- By affecting the ***health and well-being*** of neighbouring communities and project workers. Many stakeholders expressed concern about the health impact related to excessive dust (especially the black coal dust shown in Figure 26), indicated that the noise emanating from mining activities disturb their sleep, and that they are worried about the future of their businesses located adjacent the project site, resulting in high levels of stress. Landowners are also concerned about the impact of increased traffic as described in Section 5.1.9.
- By affecting the profitability of ***surrounding business enterprises***, particularly Brackchick and the Brakfontein Meat Market as discussed previously.

Recommended mitigation measures

Measures to mitigate impacts related to the visual environment, noise, air quality and groundwater are discussed in separate specialist study reports, and will not be repeated here.

Further mitigation measures to address the impact of the project on the area's sense of place include adequate rehabilitation of the landscape at the appropriate time, which is allegedly not done by all the mining proponents in the area (see Section 4.4.2.1). Furthermore, a neat appearance of the site, during construction and operational phases, will also assist in reducing the negative visual impacts.

Finally, regarding the health and well-being of the surrounding land owners, the measures recommended to ameliorate the impacts associated with displacement will also serve to mitigate these impacts.

Impact rating

IMPACT DESCRIPTION: Visual/ acoustic/ air quality impacts				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	**Rating**	**Motivation**		
PRE-MITIGATION				
Duration	Project Life (5)	Will continue through the life of the operation	Consequence: Moderately detrimental (-12)	Significance: Moderate - negative (-84)
Extent	Local (3)	Will primarily affect Ward 7 of VKLM		
Intensity x type of impact	Moderately high - negative (-4)	Will affect the quality of life of neighbouring property owners/ tenants		
Probability	Certain (7)	Impacts on the visual environment, noise, air quality and groundwater have been quantitatively assessed in separate specialist studies		
MITIGATION: - Impacts on visual environment, noise, vibration, air quality and groundwater are discussed in separate specialist study: as per relevant specialist reports - For sense of place: rehabilitation - For health and well-being: as for displacement				
POST-MITIGATION				
Duration	Project Life (5)	As for pre-mitigation	Consequence: Moderately detrimental (-10)	Significance: Minor - negative (-40)
Extent	Local (3)	As for pre-mitigation		
Intensity x type of impact	Low - negative (-2)	Potential impact will be minimised through adequate mitigation		
Probability	Probable (4)	Adequate mitigation will reduce likelihood of impact occurring as predicted above		

5.1.11 Loss of farm labour to the mines

Impact description

Given the fact that there are a number of agricultural farms in the area surrounding the project site, there are a large number of farm workers in the area. Many of these workers are somewhat more skilled than those resident in the lower-income and informal residential areas closer to Delmas Town. Particularly, many of these workers are employed as tractor and other drivers on farms, and many have skills relating to the operation of machinery. Both these skills are sought after in the mining environment.

Stakeholders have indicated that there is a trend of farm workers leaving their employment on the farms to take up more lucrative positions with the mines, leaving the farm owners without the required skilled personnel to execute farming activities. This has a financial implication for the farm owners, as it results in a temporary decrease in productivity and necessitates the training of new workers to fulfil the duties of the workers who have abandoned their employment on the farms (as described in Section 4.4.2.4).

Recommended mitigation measures

In order to minimise the detrimental effect of this impact on the surrounding farm owners, neither the mining proponent nor the subcontractors should deliberately recruit farm workers (also see 5.1.1). However, these individuals should not be discriminated against if they apply for employment with the proposed project, as it is their constitutional right to change employment should they wish to do so. The temporary nature of construction-related employment should however be made clear to applicants from the outset.

Impact rating

IMPACT DESCRIPTION: Loss of farm labour to the mines				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	**Rating**	**Motivation**		
PRE-MITIGATION				
Duration	Project Life (5)	Will continue through the life of the operation	Consequence: Moderately detrimental (-12)	Significance: Minor - negative (-72)
Extent	Municipal Area (4)	Will affect all the farm in VKLM		
Intensity x type of impact	Moderate - negative (-3)	Temporary impact on small number of people		
Probability	Highly probable (6)	It is natural to want to be engaged in a more lucrative employment situation		
MITIGATION: - No deliberate recruitment of workers from farms				
POST-MITIGATION				
Duration	Project Life (5)	As for pre-mitigation	Consequence: Moderately detrimental (-11)	Significance: Minor - negative (-55)
Extent	Municipal Area (4)	As for pre-mitigation		
Intensity x type of impact	Low - negative (-2)	The severity of impact can be reduced by minimising its probability through mitigation		
Probability	Likely (5)	Mitigation will reduce likelihood of impact occurring		

5.2 Operational phase

This section deals with the social impacts that will be most pronounced during the operational phase of the proposed project. All of impacts identified, described and rated in Section 5.1 will continue during the operational phase of the prosed project, except the social benefits emanating from job creation during the construction period. Additional impacts expected to arise during the operational phase are as follows:

- Two positive impacts, namely job creation and community development; and
- Two negative impacts, namely economic dependency on the project, and opposition because of perceived negative impacts.

As with the construction phase impacts, each of the abovementioned impacts is discussed in greater detail below, and appropriate mitigation measures are recommended. Where relevant, the reader is referred to the appropriate specialist studies in which more comprehensive and quantitatively-orientated information is provided regarding aspects that contribute to the identified social impacts.

5.2.1 Job creation during operation

Impact description

The operational phase of the proposed project is expected to last in the region of 30 years. At the time of writing the report, the estimates for the operational workforce is the same as what it is for the construction workforce, namely a total workforce of approximately 235 people, 196 positions of which will be available to un- and semi-skilled individuals, mostly from the local municipal area. [6]

As is the case with the construction phase, the operational phase of the proposed development could give rise to a small number of *indirect employment opportunities*. These could include jobs in the informal sector (for instance, in terms of food stalls for the convenience of workers), and in the formal sector (for instance, by sourcing goods and service from enterprises in the local municipal area where possible).

Recommended enhancement measures

Measures to optimise the benefits derived from employment creation through the operational phase of the project are the same as those recommended for the construction phase (see Section 5.1.1). In particular, it is recommended that local employment opportunities be maximised as far as possible. This could be achieved by utilising the "mine and community desk", and by engaging in training and capacity building (for example, as outlined in the SLP for the proposed project).

[6] It should be noted, however, that the operational workforce will be slightly smaller than the construction workforce – these figures will be refined in due course.

Impact rating

IMPACT DESCRIPTION: Job creation during operation				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	**Rating**	**Motivation**		
PRE-MITIGATION				
Duration	Project Life (5)	Equal to the duration of the operational phase	Consequence: Moderately beneficial (11)	Significance: Minor - positive (55)
Extent	Municipal Area (4)	Many positions will be filled by persons living in the local and district municipal area; some from elsewhere in SA		
Intensity x type of impact	Low - positive (2)	Only 196 employment opportunities will be available for un- and semi-skilled individuals		
Probability	Likely (5)	Without appropriate mitigation, forecasts of majority local recruitment might not be achieved		
MITIGATION: - As for job creation during construction				
POST-MITIGATION				
Duration	Project Life (5)	As for pre-mitigation	Consequence: Moderately beneficial (12)	Significance: Minor - positive (72)
Extent	Municipal Area (4)	As for pre-mitigation		
Intensity x type of impact	Moderate - positive (3)	Mitigation will maximise local job creation		
Probability	Highly probable (6)	Mitigation will maximise probability that local recruitment targets are achieved and local benefits optimised		

5.2.2 Community development and addressing community needs

Universal Coal is likely to contribute to community development and address some community needs through the implementation of their SLP for the proposed project, particularly the following:

- As part of HRD by means of a skills development plan, career progression plan, mentorship plan and learnerships. The skills development plan will include the development of mining-related skills (such as driving and technical skills, and basic management skills), adult basic education (ABET), and general life skills. HRD will mainly be focussed on mine workers; as mentioned previously, as many as 196 individuals from the VKLM could be employed by the mine in un- and semi-skilled positions.
- As part of its LED strategy, which will focus on tertiary education and upgrading of skills levels, HIV/AIDS awareness, social welfare and SMME development and job creation. At the time of writing the report, the proponent is considering the implementation of the following two LED projects:
  - Tertiary education / Further Education and Training (FET) college: as the VKLM does not have an institute for higher learning, those individuals who wish to pursue higher learning are leaving the area to receive training and education elsewhere, resulting in a “skills drain” of the area. Universal Coal aims to identify a suitable and established FET college and propose the establishment of a new branch of that college in the project area, which the proponent will assist with.

- HIV/ AIDS clinics: as a joint venture with other parties, the proponent will arrange free mobile clinic visits for mine employees. The services they will receive include VCT and condom distribution, and tests for hypertension, glucose, cholesterol and tuberculosis.

It should be noted that, unless LED projects are designed to be sustainable and to eventually attain independent financial viability, they can also have negative long-term impacts by creating economic dependency on the project – which is the topic of the following section.

Recommended enhancement measures

In order to maximise this positive impact, the following measures are recommended:

- In order to ensure that skills development and LED initiatives addresses the needs of the beneficiary communities or individuals, the details of the development projects should be finalised in consultation with community or employee representatives.
- Where possible, initiatives should be implemented in collaboration with other existing initiatives by NGOs, the municipality or other mining proponents in the area.

In addition to the development initiatives described in the SLP, it is recommended that the proponent investigates the feasibility of implementing additional development projects, benefitting a wider audience than those described above, under the auspices of Corporate Social Responsibility (CSR). The identification of such initiatives should occur in consultation with both the local municipality and the affected communities, and care should be taken to ensure adequate involvement of women and the youth in this consultation process. The implementation of CSR initiatives will not only serve to further develop the local area, but will enhance the proponent's a social license to operate in the area and minimise potential mobilisation against the project (also see Section 5.2.4).

Impact rating

<table>
<tr><th colspan="6">IMPACT DESCRIPTION: Community development and addressing community needs</th></tr>
<tr><td>Predicted for project phase:</td><td colspan="2">Pre-construction</td><td>Construction</td><td>Operation</td><td>Decommissioning</td></tr>
<tr><td>Dimension</td><td>Rating</td><td colspan="4">Motivation</td></tr>
<tr><td colspan="6">PRE-MITIGATION</td></tr>
<tr><td>Duration</td><td>Project Life (5)</td><td colspan="2">SLP for duration of operational phase</td><td rowspan="3">Consequence: Moderately beneficial (12)</td><td rowspan="3">Significance: Minor - positive (48)</td></tr>
<tr><td>Extent</td><td>Province/ Region (5)</td><td colspan="2">Will mostly benefit mine workers, although FET college will attract individuals from beyond the VKLM</td></tr>
<tr><td>Intensity x type of impact</td><td>Low - positive (2)</td><td colspan="2">Small percentage of VKLM will benefit</td></tr>
<tr><td>Probability</td><td>Probable (4)</td><td colspan="3">Required by law to honour SLP commitments</td></tr>
<tr><td colspan="6">MITIGATION:
- Liaison with beneficiaries to ensure needs are met
- Representation of women in consultation
- Collaboration during implementation
- Implement CSR initiatives</td></tr>
<tr><td colspan="6">POST-MITIGATION</td></tr>
<tr><td>Duration</td><td>Beyond project life (6)</td><td colspan="2">If well managed and sustainable, benefits will extend beyond project life</td><td rowspan="3">Consequence: Highly beneficial (15)</td><td rowspan="3">Significance: Moderate - positive (90)</td></tr>
<tr><td>Extent</td><td>Province/ Region (5)</td><td colspan="2">As for pre-mitigation</td></tr>
<tr><td>Intensity x type of impact</td><td>Moderately high - positive (4)</td><td colspan="2">Recommended measures will result in more people benefitting</td></tr>
<tr><td>Probability</td><td>Highly probable (6)</td><td colspan="3">Recommended measures will increase probability of initiative having a positive effect</td></tr>
</table>

5.2.3 Economic dependency on the project

Impact description

As indicated in Section 4.1.3.1, the level of unemployment in the study area is high, implying an imbalance between the number of job-seekers and available job opportunities. It is expected that the proposed project will continue operations for nearly 30 years, after which employment of its workforce would inevitably have to be terminated. In addition, retrenchments could be necessitated at other times during the operation's lifespan as a result of external forces such as reduced profitability of or demand for coal (although this is unlikely). At such a time, project employees may not be able to secure alternative employment subsequent to downscaling or retrenchment. Retrenchments will lead to loss of income and local expenditure, which could result in increases in social pathologies, such as crime.

The fact that the proposed project will one of many mining operations in the VKLM, the relatively small size of the operational workforce, as well as the small number of local individuals who stand to benefit from the project operations through both direct and indirect job opportunities, minimises the significance of this potential impact when the Brakfontein project is considered in isolation. However, the possibility should be considered that several mining operations in the surrounding area could be nearing the end of their lives at

approximately the same time as this project – a circumstance that could result is a significant down-turn in the local economy.

Recommended mitigation measures

The negative impacts associated with downscaling and retrenchment will be addressed in the SLP to be revised every five years during the operational phase of the proposed project. Some of the mechanisms the proponent could consider to include should retrenchment become inevitable include the following:

- Assistance, prior to retrenchment date, with retraining, portable skills training and other courses to enhance further employment practices.
- Assistance in accessing available and suitable jobs with other local companies.
- Informing other companies of the retrenchment process and ascertaining any job vacancies in existence.
- Assistance with accessing outplacement and/or career transition counselling from relevant consultancies or job advice centres in the community (if any).
- Assistance with completing job application and other relevant forms.
- Financial planning advice as well as advice and support in accessing pension/provident fund pay-outs and Unemployment Insurance Fund claims or other state assistance.
- Personal counselling for individuals and groups to be able to deal with the trauma associated with retrenchment. This could be extended to both retrenched employees and those left behind.
- Keeping a database of retrenched employees, who may then be given preference for jobs, in line with the skills requirements of such jobs, in the event of new vacancies arising from the project in future.

Given this impact's low significance, no additional mitigation measures are considered necessary.

Impact rating

IMPACT DESCRIPTION: Economic dependency on operation				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	**Rating**	**Motivation**		
PRE-MITIGATION				
Duration	Beyond project life (6)	Effects of retrenchments/ decommissioning will be long-lasting	Consequence: Moderately detrimental (-13)	Significance: Moderate - negative (-78)
Extent	Municipal Area (4)	Will most severely affect employees and service providers from the VKLM		
Intensity x type of impact	Moderate - negative (-3)	Local economy may become somewhat dependent on operation		
Probability	Highly probable (6)	The project will come to an end, and retrenchments are likely due to long operational phase		
MITIGATION: -- SLP should be drafted in such a way that will minimise the impact of retrenchments and downscaling - Transparency regarding employment practices and CSR initiatives - Keep communities updated - Presentation of EIA findings in clear and understandable manner				
POST-MITIGATION				
Duration	Beyond project life (6)	As for pre-mitigation	Consequence: Moderately detrimental (-12)	Significance: Minor - negative (-48)
Extent	Municipal Area (4)	As for pre-mitigation		
Intensity x type of impact	Low - negative (-2)	Mitigation will reduce the impact of retrenchment		
Probability	Probable (4)	Mitigation will reduce severity of impact on retrenched workers		

5.2.4 Opposition because of perceived negative impacts

Impact description

This predicted impact differs from the preceding ones in that it deals with potential impact of community attitudes and actions on the project, rather than impacts of the project on communities. The relevance of such impacts in the context of this report stems from the fact that, as with the other impacts discussed above, appropriate mitigation will be required – the difference being that, in this instance, the mitigation measures would be aimed at changing aspects of community perceptions and behaviour rather than changing aspects of the project's design and implementation.

The impact assessed here pertains to the fact that perceptions regarding potential negative project impacts (whether these be accurate or not) could engender community opposition to the project – which, in turn, could potentially give rise to active community resistance to project plans.

Strained community relations could have a very detrimental impact on the successful implementation of a project: if a company's neighbours view the enterprise with suspicion or disdain, they have the power to not only delay the environmental authorisation process through appeals, they can also damage the company's public image through bad publicity. In

extreme cases, acrimonious community relations can give rise to active social mobilisation against a project or to costly litigation.

Despite Universal Coal's best intentions to fostering positive community relations, there is some risk that one or more of the negative scenarios sketched above could materialise prior to or during project implementation. This risk stems from the following:

- The surrounding communities are very sensitive about employment practices of industries in the area. As indicated earlier, these communities will not tolerate mines employing low-skilled persons from outside the VKLM.
- Stakeholders indicated that communities are becoming more aware about the obligations mines have towards the surrounding communities and the environment. It may happen that these communities are eager to put their newly acquired knowledge in action by opposing actions by the proponent, either rightly or wrongly.
- The surrounding land owners are very concerned about the noise, dust and impacts on the quantity and quality of ground water, as these impacts will not only affect their quality of life, but also have a debilitating impact on their business ventures. In addition, these land owners are of the opinion that blasting results in the cracking of their residential structures, which, at this point in time, they assume full financial responsibility for.
- The surrounding land owners are concerned about the impact the project will have on the quality of roads, and the associated safety impacts (as discussed in Section 5.1.9).
- Some of the surrounding land owners have lost farm workers to the mines, which has a financial impact on the farmers (see Section 5.1.11).

The surrounding land owners accept that mining is becoming the dominant land use in the area, and they are by no means unreasonable with their concerns regarding the proposed project. As such, provided that they are treated fairly by the proponent (the term "fairly" meaning in a respectable manner that favours the land owner, albeit within reason), social mobilisation by this category of stakeholders is unlikely.

The sensitivity among the broader community regarding the employment of individuals outside the local municipal area, as well as the general perception that the mines are not contributing to the well-being of the local population (as discussed in Section 4.4.1) poses somewhat of a risk for the proposed project; these concerns and attitudes should not be ignored and their potential to solidify into active community opposition to the project should not be underestimated.

Recommended mitigation measures

There is some existing goodwill among communities in the local study area, stemming from primarily the following:

- The fact that the project is expected to create a number of job opportunities, which would benefit some members of surrounding communities (as discussed in Sections 5.1.1, 5.2.1 and 5.1.2 above); and
- The surrounding land owners are hoping to reach agreeable solutions to their problems relating to the impacts of mining in the area of their psychological and financial well-being.

These positive expectations have the potential to persist into project implementation (where relevant), engendering a sense of social goodwill towards the project and the project proponent amongst surrounding communities and land owners. Although such goodwill is not something tangible that can be measured in physical or monetary terms, its importance in terms of fostering positive external relations and reducing the risk of litigation or negative publicity for the company should be acknowledged. Experience with other projects has shown that efforts to secure a social license to operate do, in the long run, incur significant benefits and cost savings for project proponents.

As such, Universal Coal should seek to capitalise on the existing goodwill through appropriate mitigation, as follows:

- The proponent should honour the commitments made in the existing SLP;
- The proponent should be transparent regarding employment practices and LED initiatives, and these should be communicated to the local communities; and
- The findings of the various specialist studies conducted as part of the EIA should be summarised and presented to the surrounding land owners and communities in a simple and clear manner in order to illustrate that Universal Coal has taken their concerns into account, to explain how these concerns will be addressed or mitigated, as well as to illustrate the significance of the resultant impacts after mitigation.

Impact rating

IMPACT DESCRIPTION: Opposition because of perceived negative impacts				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	**Rating**	**Motivation**		
PRE-MITIGATION				
Duration	Project Life (5)	May continue throughout the life of the operation	Consequence: Highly detrimental (-14)	Significance: Minor - negative (-70)
Extent	Municipal Area (4)	Will affected the entire local municipal area		
Intensity x type of impact	High - negative (-5)	Could lead to negative publicity for the company; community mobilisation against the project		
Probability	Likely (5)	Stakeholders are sensitive towards many possible impacts that may result from development		
MITIGATION: - Communicate commitments regarding LED - Transparency regarding employment practices - Presentation of EIA findings in clear and understandable manner				
POST-MITIGATION				
Duration	Project Life (5)	As for pre-mitigation	Consequence: Moderately beneficial (13)	Significance: Minor - positive (65)
Extent	Municipal Area (4)	As for pre-mitigation		
Intensity x type of impact	Moderately high - positive (4)	Mitigation will enable proponent to capitalise on existing goodwill		
Probability	Likely (5)	Widespread awareness of project benefits will increase probability of generating goodwill		

5.3 Decommissioning

The most significant socio-economic impact associated with mine closure and decommissioning is arguably the loss of employment. However, this impact and recommended mitigation measures to reduce its severity were discussed above in the context of economic dependency on the project (see Section 5.2.3) and will not be repeated here.

However, decommissioning activities will also *create* some employment opportunities, albeit of a temporary nature. This positive impact is discussed in Section 5.3.1 below.

Decommissioning could also give rise to impacts similar to those discussed above (in Sections 5.1 and 5.2) in the context of construction and operational activities. These include:

- Multiplier effects on the local economy;
- Safety impacts; and
- Visual/ acoustic/ air quality impacts.

5.3.1 Job creation during decommissioning

Impact description

The activities associated with the decommissioning phase of the proposed project are listed in Section 3.4.2. Two of these activities, namely the demolition and removal of infrastructure

and aspects of rehabilitation, could conceivably be performed by unskilled individuals resident in the VKLM. At the time of conducting the SIA, the required workforce for this phase of the project is yet to be determined, as is the anticipated timeframe for this phase, thus estimating the significance of this social benefit is problematic and based on estimated only.

Recommended enhancement measures

The enhancement measures recommended under Section 5.1.1 to maximise local employment will also serve to maximise the benefits that could eminent from this impact.

Impact rating

IMPACT DESCRIPTION: Job creation during decommissioning				
Predicted for project phase:	Pre-construction	Construction	Operation	Decommissioning
Dimension	**Rating**	**Motivation**		
PRE-MITIGATION				
Duration	Short term (2)	Decommissioning activities will likely be completed in less than a year	Consequence: Slightly beneficial (8)	Significance: Minor - positive (40)
Extent	Municipal Area (4)	Many positions can be filled by individuals within the VKLM		
Intensity x type of impact	Low - positive (2)	Few jobs will be available for a short period of time		
Probability	Likely (5)	Decommissioning activities must take place and locals will likely be used		
MITIGATION: As for job creation during construction				
POST-MITIGATION				
Duration	Short term (2)	As for pre-mitigation	Consequence: Slightly beneficial (9)	Significance: Minor - positive (54)
Extent	Municipal Area (4)	As for pre-mitigation		
Intensity x type of impact	Moderate - positive (3)	Mitigation will maximise local job creation		
Probability	Highly probable (6)	Mitigation will maximise probability that local recruitment targets are achieved and local benefits optimised		

6 ASSESSMENT OF ALTERNATIVES

As mentioned in Section 2.7, it is a requirement in terms of current environmental legislation that practical project alternatives be considered during impact assessment. The most pertinent project alternative in the case of this project is the ***no-go alternative***. The approach adopted in the assessment of impacts in this study entailed a comparison between anticipated future socio-economic conditions, with and without the project. Hence the no-go alternative would essentially imply that none of the impacts described in Section 5 would materialise, and that socio-economic conditions in the study area would continue to display the characteristics and trends observed in the socio-economic baseline profile (Sections 4.1 and 4.2).

Possible alternative ***land uses*** in the case that the project is not implemented include agriculture combined with low-density residential (current land use) and low-cost housing. With regards to ***agriculture***, the soils and land use impact assessment has found that the project site is situated on prime agricultural land. The aforementioned study considers the financial impact the proposed project will have on the maize production industry; this impact is therefore not considered again in this study. Due to the increasing prevalence of mining in the surrounding area, the viability of using the proposed project site for ***low-density residential*** purposes is decreasing; other mining operations in the area have resulted in a decreased quality of life for residents located on or surround the project site under consideration in this study. In fact, most surrounding land owners indicated their desire to be relocated elsewhere. Similarly, the viability of ***low-cost housing*** is jeopardised by the presence of other mining operations in the area. Additionally, there is a trend in the local municipal area of individuals moving out of more rural settings into the town of Delmas, in search of employment opportunities and for the sake of better access to services. ***Mining*** thus appears to be the most viable and appropriate land use for the project site from a social perspective.

The scope for ***mine plan and infrastructure layout alternatives*** is limited by the geographical characteristics of the area; that is to say, the location of ore largely determines the mine plan, as does the location of wetlands. This fact, together with the nature of the impacts described in Section 5, implies that changes to the mine plan and layout of infrastructure will not have a significant impact on the impacts to the social environment.

The only aspect of the project's design that *does* lend itself to feasible alternatives is the alignment of ***transport routes***. The alternative routes were described in Section 3.5.4 above. Of these alternatives, both Options 2 and 3 make use of the gravel road that passes along the front of the Brakfontein Meat Market, as well as a number of settlements along that road. Due to the presence of these settlements, there are a number of school children on the road during the afternoons, walking home from (presumably) a nearby bus stop. Thus, the safety risk these options have for the local community, as well as the dust to be generated by HMV that is expected to affect the meat market, results in Option 1 being the preferred

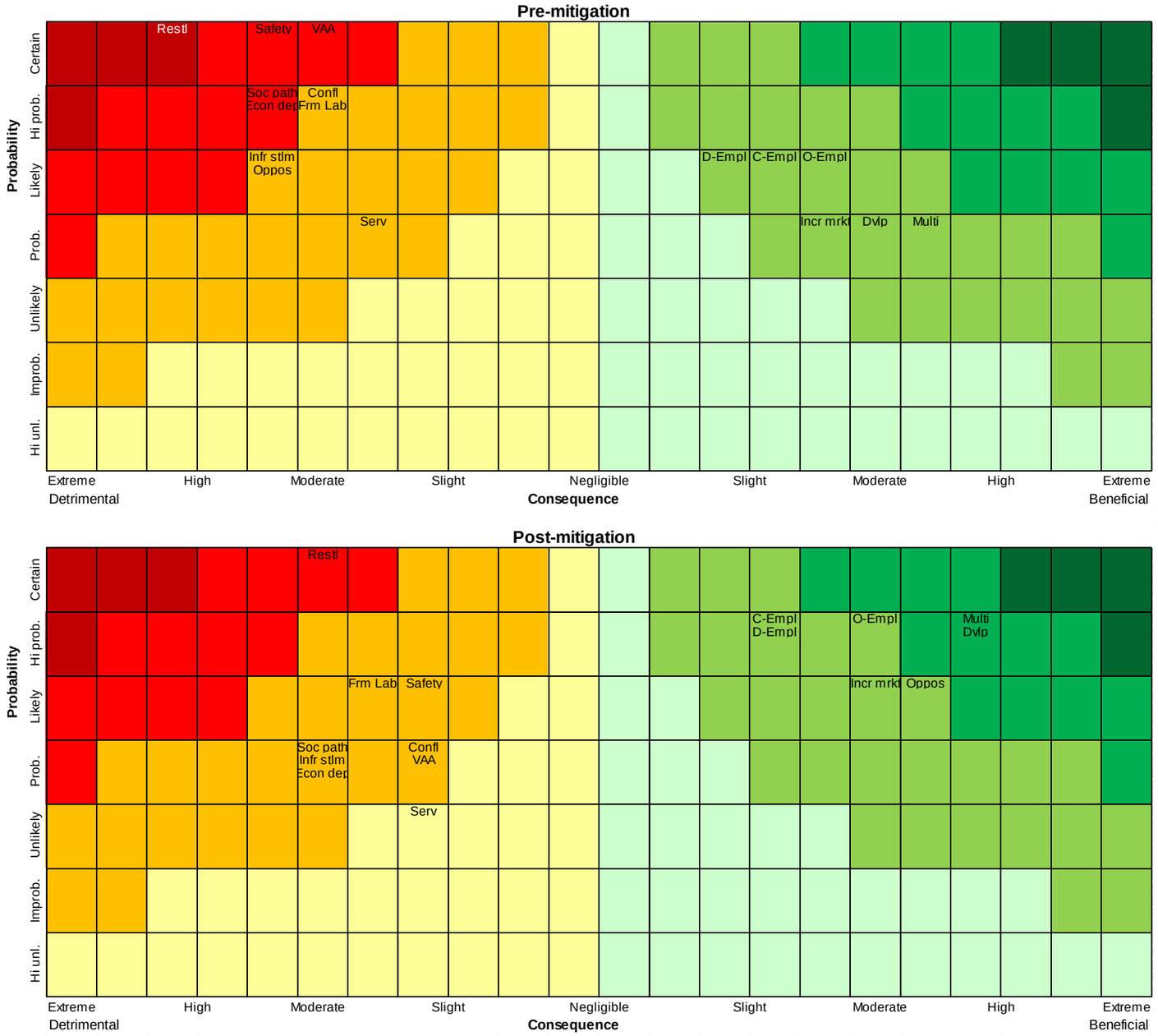
transport alternative from the proposed project to the Kangala Colliery. The route followed by Option 1 is used by a number of other mines already operational in the area.

7 CONCLUSION AND RECOMMENDATIONS

The pre- and post-mitigation ratings assigned to the various impacts discussed in Section 5 are summarised in Table 19 and graphically represented in Figure 27 below. In the figure, the entries in the various coloured cells correspond to the codes given for impacts in the first column of Table 19.

Table 19: Summary of impact ratings

Code	Impact	Pre-mitigation:						Post-mitigation:					
		Duration	Extent	Intensity	Conse-quence	Proba-bility	Signifi-cance	Duration	Extent	Intensity	Conse-quence	Proba-bility	Signifi-cance
C-Empl	Job creation during construction	Medium term	Municipal Area	Low - positive	Slightly beneficial	Likely	Minor - positive	Medium term	Municipal Area	Moderate - positive	Moderately beneficial	Highly probable	Minor - positive
Multi	Multiplier effects on local economy	Project Life	Province/ Region	Moderate - positive	Moderately beneficial	Probable	Minor - positive	Project Life	Province/ Region	High - positive	Highly beneficial	Highly probable	Moderate - positive
Incr mrkt	Increased markets for local entrepreneurs	Project Life	Municipal Area	Low - positive	Moderately beneficial	Probable	Minor - positive	Project Life	Municipal Area	Moderate - positive	Moderately beneficial	Likely	Minor - positive
Restl	Physical and economic displacement	Permanent	Local	Very high - negative	Highly detrimental	Certain	Major - negative	Permanent	Local	Low - negative	Moderately detrimental	Certain	Moderate - negative
Confl	Conflict/ competition between newcomers and incumbent population	Medium term	Municipal Area	High - negative	Moderately detrimental	Highly probable	Minor - negative	Medium term	Local	Moderate - negative	Slightly detrimental	Probable	Minor - negative
Serv	Increased pressure on local services/ resources	Medium term	Municipal Area	Moderately high - negative	Moderately detrimental	Probable	Minor - negative	Medium term	Municipal Area	Low - negative	Slightly detrimental	Unlikely	Negligible - negative
Soc path	Increased social pathologies	Project Life	Municipal Area	Moderately high - negative	Moderately detrimental	Highly probable	Moderate - negative	Project Life	Municipal Area	Moderate - negative	Moderately detrimental	Probable	Minor - negative
Infr stlm	Growth of informal settlements	Long term	Municipal Area	High - negative	Moderately detrimental	Likely	Minor - negative	Long term	Municipal Area	Moderately high - negative	Moderately detrimental	Probable	Minor - negative
Safety	Safety impacts	Project Life	Local	High - negative	Moderately detrimental	Certain	Moderate - negative	Project Life	Local	Low - negative	Moderately detrimental	Likely	Minor - negative
VAA	Visual/ acoustic/ air quality impacts	Project Life	Local	Moderately high - negative	Moderately detrimental	Certain	Moderate - negative	Project Life	Local	Low - negative	Moderately detrimental	Probable	Minor - negative
Frm Lab	Loss of farm labour to the mines	Project Life	Municipal Area	Moderate - negative	Moderately detrimental	Highly probable	Minor - negative	Project Life	Municipal Area	Low - negative	Moderately detrimental	Likely	Minor - negative
O-Empl	Job creation during operation	Project Life	Municipal Area	Low - positive	Moderately beneficial	Likely	Minor - positive	Project Life	Municipal Area	Moderate - positive	Moderately beneficial	Highly probable	Minor - positive
Dvlp	Community development and addressing community needs	Project Life	Province/ Region	Low - positive	Moderately beneficial	Probable	Minor - positive	Beyond project life	Province/ Region	Moderately high - positive	Highly beneficial	Highly probable	Moderate - positive
Econ dep	Economic dependency on operation	Beyond project life	Municipal Area	Moderate - negative	Moderately detrimental	Highly probable	Moderate - negative	Beyond project life	Municipal Area	Low - negative	Moderately detrimental	Probable	Minor - negative
Oppos	Opposition because of perceived negative impacts	Project Life	Municipal Area	High - negative	Highly detrimental	Likely	Minor - negative	Project Life	Municipal Area	Moderately high - positive	Moderately beneficial	Likely	Minor - positive
D-Empl	Job creation during decommissioning	Short term	Municipal Area	Low - positive	Slightly beneficial	Likely	Minor - positive	Short term	Municipal Area	Moderate - positive	Slightly beneficial	Highly probable	Minor - positive



Significance:	Negative	Positive
Major		
Moderate		
Minor		
Negligible		

Figure 27: Graphical representation of consequence, probability and significance ratings

7.1 Main conclusions regarding potential socio-economic impacts

The foregoing table and figure show that a total of 16 social impacts were identified for the proposed project. Of these, six are positive, nine are negative and one is an adverse impact that can, through appropriate mitigation, become a social benefit. The significance ratings for ***negative impacts without any mitigation*** range from major to minor:

- Five impacts have been given a significance rating of minor;
- Four impacts have been rated as moderate; and
- One impact has been rated as major.

Significance ratings of ***positive impacts without any mitigation***, on the other hand, have all been rated as minor.

If all mitigation measures are implemented according the recommendations given in Section 5, it is anticipated that the consequence and/or probability of most negative impacts will be reduced. This is reflected in the ***residual or post-mitigation significance ratings*** assigned to ***negative impacts***, which range from moderate to negligible:

- One impact has been rated as moderate;
- Seven impacts have been given a significance rating of minor; and
- One impact has been rated as negligible.

The post-mitigation significance rating of one potential adverse impact is that of moderately ***positive***, indicating that appropriate mitigation measures could not only avoid the occurrence of the negative impact, but turn it into a moderately positive community benefit.

The ***post-mitigation significance ratings of positive impacts*** are sometimes higher than their pre-mitigation ratings, ranging from minor to moderate:

- Five impacts have been rated as minor; and
- Two impacts have been given a significance rating of moderate.

This summary confirms that adequate mitigation measures are expected to reduce the significance of negative impacts to acceptable levels, while positive impacts will on average be significantly enhanced to maximise benefits to surrounding communities.

7.2 Recommendations

This section provides recommendations with regard to the implementation of mitigation measures and other more general recommendations to aid the successful implementation of the proposed project.

7.2.1 Mitigation measures

In view of the above, it is strongly recommended that the mitigation measures described in Section 5 be incorporated into the Environmental Management Plan for the proposed project and, where relevant, into the contract conditions to be issued to the subcontractors. Measures must also be put in place to monitor and assess implementation of these mitigation measures and to take corrective action where necessary.

7.2.2 General recommendations

Throughout the SIA process, the specialist identified a number of issues that warrant consideration by the proponent when implementing the proposed project. These are listed below:

- Any training provided by the proponent or its subcontractors should be accredited by the relevant South African Qualifications Authority (SAQA). This will enhance the benefits derived from training in terms of enhancing trainees' future career prospects.
- The proponent should support the currently conceptual "mine and community desk" in order to promote synergy between the large number of mining houses in the local municipal area. Through such a synergy, efforts to develop the area will be enhanced.
- Community liaison on the part of the mines seems to be very limited in the area. Universal Coal should endeavour to set an example to other mines by implementing a comprehensive and transparent community engagement plan. In addition, when identifying or refining LED (and possibly CSR) initiatives, the proponent should engage in adequate community consultation, including the local municipality. Continued and genuine consultation with communities, geared towards establishing and maintaining a good relationship with these stakeholders, will likely pre-empt many of the potential problems in terms of community opposition to or social mobilisation against the proposed project. As recommended in Section 5.1.9, it is advisable that Universal Coal appoints CLOs from the local communities to act as a point of contact between the proponent and communities. The necessity of a good relationship with communities is discussed in Section 5.2.4.
- Politics seem to play a very influential role in the VKLM, sometimes resulting in only small portions of the population benefitting from mining projects in the area. As such, the selection of, inter alia, CLOs, should be done in collaboration with and input from representatives of all the large political parties.
- Considering that no recruitment should take place on site, that many of the un- and semi-skilled employment positions will be filled by individuals from within the VKLM and that the main labour sending area is almost 20km from the project site, the proponent should consider supplying daily transport for local employees from Delmas to the project site and back.

- With regards to blasting activities, Mr Geriecke indicated that he will insist on the proponent providing him with a seismograph on his property. Given his location relative to the project site, it is advised that the proponent adheres to this request, unless he is relocated. Furthermore, most of the surrounding land owners indicated that they will require the proponent to test their borehole yields, as well as the quality of the water, prior to any blasting activity. This too, should be adhered to.

8 REFERENCES

Digby Wells (2009). Public Participation Report for the Environmental Impact Assessment for Brakfontein Mine.

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Sonnenberg, D & Münster, F. (2001). Involuntary Resettlement. Mining Minerals Sustainable Development Southern Africa, Research Topic 3: Mining and Society.

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Victor Khanye Local Municipality (2009). Spatial Development Framework.

Victor Khanye local Municipality (2011/2012). Integrated Development Plan.

ANNEXURES

Appendix A: Curriculum Vitae of specialist team

Curriculum Vitae – Jan Perold

Education

2005	:	PhD (Research Psychology)	University of Pretoria, South Africa
2003	:	Master's Certificate in Social Impact Assessment, *Cum Laude*	Rand Afrikaans University, South Africa
2000	:	MA (Research Psychology) *Cum Laude*	University of Pretoria, South Africa
1996	:	Diploma in Tertiary Education *Cum Laude*	University of Pretoria, South Africa
1995	:	BSc (Honours)(Psychology)	University of South Africa (UNISA)
1989	:	BSc (Honours)(Physics)	University of Pretoria, South Africa
1988	:	BSc. *Cum Laude*, Subjects: Mathematics, Applied Mathematics, Physics	University of Pretoria, South Africa

Employment

02/2012 – present	Digby Wells Environmental	Manager: Social Sciences Department
01/2009 – 02/2012	Aurecon	Social Scientist
07/2006 – 12/2008	Golder Associates Africa	Social Scientist
01/2002 – 12/2005	Afrosearch	Social impact assessment specialist
01/2002 – 12/2005	Institute for Christian Psychology	Contracted lecturer: BA (Psychology)
04/2001 - 05/2002	Bond University	Contracted lecturer: BA (Psychology)
01/1999 – present	Department of Psychology, University of Pretoria	Part-time lecturer; guest-lecturer
03/1995 – 08/1997	Top Teach Tertiary Educational Institution	HOD: Programme Development
01/1992 – 02/1995	Mikomtek, CSIR	Scientist

Experience

Dr Perold has extensive national and international experience in social impact assessment, resettlement planning, social surveys, statistics and the compilation of social and labour plans. He has been involved in a variety of projects in the following countries: South Africa, Mozambique, Swaziland, Botswana, Ghana, Tanzania, Rwanda, Burundi and the Central African Republic.

Dr Perold is registered at the Health Professions Council of South Africa as a research psychologist, and has completed his PhD degree in Research Psychology at the University of Pretoria. His doctoral thesis focuses on the application of systems theory to analyse the psychosocial dynamics of public participation. He also has a strong natural science background, having attained an Honours Degree in Physics.

Professional registration

Position	Professional Body	Registration Number
Member	Health Professions Council of South Africa	PS 0069558

Publications

Authors and Year	Title	Published in
Perold J, Visser M, Moleko A, Bron A, Combrinck J, Henning S, Pelser S, Wessels S (1998)	Exploring the culture of teaching and learning: A cybernetic model	Proceedings of the 1998 SAALED Conference
Perold J (1999)	Interpersonal processes in a Web-based Psychology course	The Researcher, 2, 5-8
Visser M, Perold J & Schoeman J (2000)	An eco-systemic approach to the implementation of social programs in the community	Poster presentation at the 13th Annual Convention of the American Psychological Society, 14-17 June 2000 in Toronto, Canada
Perold, J (2000)	Paradox and Pedagogy: The double bind hypothesis and the culture of teaching and learning in South African schools	Unpublished MA dissertation, Department of Psychology, University of Pretoria
Perold J (2001)	Paradox and Pedagogy: Double Binds and the Culture of Learning in South African Schools	Culture and Psychology, 7(4), 411-432
Perold J & Maree DJF (2003)	Description of novelty, novelty of description: A dialectic analysis of a Web-based course	Computers & Education, 41(3), 225-248
Visser MJ, Schoeman	Evaluation of HIV/AIDS	Journal of Health Psychology,

Authors and Year	Title	Published in
JB & Perold JJ (2004)	Prevention in South African Schools	9(2), 263-280
Perold J (2005)	The psychosocial dynamics of public participation: A systemic analysis	Unpublished Ph.D. dissertation, Department of Psychology, University of Pretoria
Aucamp, I, Woodborne, S, Perold, J, Bron, A, Aucamp, S-M (2011)	Looking beyond impact assessment to social sustainability	New Directions in Social Impact Assessment: Conceptual and Methodological Advances. Ed. Frank Vanclay & Ana Maria Esteves. Cheltenham, UK: Edward Elgar (in press)
Perold J (2011)	On Little Foot and Great Expectations: Using Logframe Methodology to integrate data from diverse sources in assessing the impact of the Cradle of Humankind Project	Proceedings of the Annual Conference of the International Association for Impact Assessment (South Africa), August 2011

Project experience

Project Title	Project Location	Date:		Description of the Project	Role of Firm in the Project	Own Role in the Project	Time involved (man months)	Name of Client	Contract Outcomes	Contract Value	Reference
Provision of Independent Traffic and Technical Advisory Services for the Lagos-Ibadan Toll Road Project	Lagos State, Nigeria	08/2011	Ongoing	Upgrading of the 100-km road between Lagos and Ibadan; construction of rest areas and truck stops; and establishment of a tolling system	Provision of independent traffic and technical advisory services for the for the design, construction, operation and maintenance of the Lagos-Ibadan Toll Road Project	Review of socio-economic components of previous studies undertaken, comparison against international best-practice standards (Equator Principles), and identification of additional work required.	3	Bi-Courtney Highway Services Ltd	Report outlining additional work to be undertaken to meeting Equator Principles	R5.2 million	James Scheepers, Technical Director: Traffic Engineering and Transportation Planning, Aurecon. Tel: +27 12 427 2566 Cell: +27 82 600 2891 Email: James.Scheepers@aurecongroup.com
Bankable feasibility study for the Zuma Energy Coal-fired Power Station	Kogi State, Nigeria	10/2010	01/2012	Construction and operation of a coal-fired power station along the Niger River in Nigeria; environmental and other relevant regulatory authorisations for the project.	Preparation of a bankable feasibility study, including a review of studies already undertaken, identification of gaps, and establishing what additional work is required to complete the study.	Review of socio-economic components of previous studies undertaken, comparison against international best-practice standards (IFC Performance Standards), identification of additional work required, and preliminary costing of social mitigation and management measures.	2	Zuma Energy	Report outlining additional work to be undertaken to complete bankable feasibility study; preliminary costing of social & environmental mitigation and management measures	R4 million	Felix A. Fawole Head, Health, Safety & Environment Dept., Zuma Energy. Email: hhse@wggroup.org Cell: +234 81 664 76053

Project Title	Project Location	Date:		Description of the Project	Role of Firm in the Project	Own Role in the Project	Time involved (man months)	Name of Client	Contract Outcomes	Contract Value	Reference
Data compilation and pilot application of the Nile Basin Decision Support System	Burundi, Democratic Republic of Congo, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, Sudan, Tanzania, and Uganda	07/2011	04/2012	The Nile Basin Decision Support System (NB-DSS) is a water balance and allocation model, linked to a set of core models relevant to the priority areas of concern in the Nile Basin, integrated with an information system and decision support tools for multi-criteria decision analysis.	Producing quality assured data sets that are relevant for NB-DSS applications, applying the NB-DSS for pilot project cases that are relevant for trans-boundary water resources management, and training stakeholders from riparian countries in the application of the NB-DSS.	Identification of social indicators for inclusion in the NB-DSS, Definition of linkages between social, economic, environmental and hydrological indicators/ variables, identification of data sources for quantification of social indicators, and definition of data quality requirements and relevant metadata.	3	Nile Basin Initiative: Water Resource Planning and Management Project	Data quality control and quality assurance guidelines, populating the NB-DSS Information Management System, identification of pilot application cases and scenarios, and use of NB-DSS to evaluate scenarios.	R6.9 million	Verno Jonker, Technical Director, Aurecon, Tel: +27 21 481 2473 Cell: +27 82 573 9168 Email: Verno.Jonker@aurecongroup.com
Construction of a coal-fired power station in the Erongo Region of Namibia	Namibia	08/2011	ongoing	Environmental and Social Impact Assessment (ESIA) for the proposed coal-fired power station	Undertaking site selection, ESIA, public participation process and developing Environmental and Social Management Plans	Conducting Social Impact Assessment	4	NamPower	Social Impact Assessment (SIA) specialist report	R3.8 million	Margaret van der Merwe, Project Manager, NamPower, +264 61 2052338, Margaret.Van.Der.Merwe@nampower.com.na

Project Title	Project Location	Date:		Description of the Project	Role of Firm in the Project	Own Role in the Project	Time involved (man months)	Name of Client	Contract Outcomes	Contract Value	Reference
Design and Engineering Services for the MeerKAT Radio Telescope Project	Northern Cape Province, South Africa	04/2011	ongoing	Construction of the MeerKAT (Karoo Array Telescope) as part of the bid for the larger Square Kilometre Array (SKA) Radio Telescope Project	Provision of design & engineering services for various work packages, incl. Roads, Construction Camps, Water Treatment Plant, Landing Strip, Electrical Reticulation, Processor Building, Dish Assembly Shed Extension & Pedestal Integration Building	Development of Social and Labour Roadmap for the components of the project contracted to Aurecon	2	SKA South Africa	Development of Social and Labour Roadmap report, input into contract specifications re local employment & skills development	R6.6 million	Tracy Cheetham, Project Manager, SKA South Africa, +27 11 442 2434. tcheetham@ska.ac.za
Khanyisa Power Station Project	Mpumalanga Province, South Africa	08/2011	ongoing	Environmental and Social Impact Assessment and Resettlement Action Plan for the Khanyisa Power Station Project and associated infrastructure	Undertaking Environmental and Social Impact Assessment, and compilation and implementation of Resettlement Action Plan	Compilation and implementation of Resettlement Action Plan (RAP)	3	Anglo American	RAP and implementation of the Plan	R500 000 for compilation and implementation of RAP	Julian Eslait, Project Manager, Anglo American, jeslait@angloamerican.co.za +27 11 638 5135

Project Title	Project Location	Date:		Description of the Project	Role of Firm in the Project	Own Role in the Project	Time involved (man months)	Name of Client	Contract Outcomes	Contract Value	Reference
External review of the Environmental Impact Assessment for the proposed Nuclear-1 Power Station	Western and Eastern Cape Provinces, South Africa	06/2011	08/2011	Review of the Revised Draft Environmental Impact Report (EIR) by an external Panel of Experts	Membership of the review panel to review social components of the EIR	Review of Social, Traffic, Tourism, Agriculture, Economic, Emergency Response, Site Control & Access, Visual, Transport & Health specialist studies, and public participation report	1	Department of Environmental Affairs	Review report	R80 000 for review of social component of EIR	Milicent Solomons, Deputy Director: Environmental Impact Evaluation: Parastatals, Department of Environmental Affairs, + 27 12 395 1852, Msolomons@environment.gov.za
Environmental Management Plan for the Metolong Dam Water Supply Programme	Lesotho	07/2010	09/2011	The Metolong Dam Water Supply Programme involves the construction of the Metolong Dam, a raw water treatment facility, as well as a network of feeder pipelines and reservoirs	Preparation of Environmental and Social Management Guideline (ESMG), Strategic Environmental and Social Management Plan (ESMP) & component-specific ESMPs for the Programme	Preparation of social components of ESMG, Strategic ESMP and component-specific ESMPs	3	Metolong Authority	Completion of ESMG and ESMP reports	R700 000	Ntaoleng Mochaba, Metolong Authority, ntaoleng.mochaba@metolong.org.ls
Environmental Impact Assessment for the Mbewu - Isundu Power Line	KwaZulu-Natal, South Africa	03/2011	ongoing	Environmental Impact Assessment and Environmental Management Plan for the Mbewu - Isundu 2x400kv Power Line Project	Undertaking the Environmental Impact Assessment and developing the Environmental Management Plan	Supervision of Social Impact Assessment	1	ESKOM Holdings	EIA Report and EMP	R160 000 for social impact assespsment	Pieter Botha (Dr) (project leader, Aurecon) Tel: +27 12 427 2529 Mobile: +27 83 321 1634 Email: Pieter.Botha@ aurecongroup.com

Project Title	Project Location	Date:		Description of the Project	Role of Firm in the Project	Own Role in the Project	Time involved (man months)	Name of Client	Contract Outcomes	Contract Value	Reference
Pre-feasibility study for the Great Lakes Railway	Burundi, Rwanda, DR Congo, Uganda, Tanzania, Zambia, Southern Sudan.	05/2011	ongoing	Development of a rail-lake transport system linking countries in the Greate Lakes region of East Africa	Pre-feasibility study for the Great Lakes rail-lake transport system	Social screening as part of Feasibility Study Report	2	Common Market for Eastern and Southern Africa (COMESA)	Feasibility Study Report	R200 000 for environmental and social component	Mr TS Hardwick (project leader). Tel: +27 12 427 2729 Fax: +27 12 427 2850 Email: trevor.hardwick@ aurecongroup.com
Construction of five state veterinary offices	Namibia	11/2010	09/2011	Design and construction of five veterinary state offices in various locations in Namibia	Design, environmental authorisation and construction supervision	Social impact assessment and development of Public Health and Public Safety Awareness Plan	3	Millennium Challenge Account Namibia	Socio-economic impact assessment report, public health and safety awareness plan	R 300 000	Timo Mufeti, Director: Environmental & Social Assessments. Millennium Challenge Account Namibia Tel: +264 61 410 400 Fax: +264 88 616 502 Mobile: +264 81 1244417
Working for Wetlands Project	Various locations, South Africa	06/2010	03/2011	Rehabilitation of various wetlands across South Africa as part of the Expanded Public Works Programme	Planning of rehabilitation interventions for the Working Wetlands Programme 2011-2014	Development of monitoring and evaluation framework for the social beneficiation component of the project	3	South African National Biodiversity Institute	Monitoring and evaluation framework based on Lograme Methodology, adopted for implement-tation	R10 500 000	Umesh R. Bahadur Manager: Planning, Monitoring & Evaluation Working for Wetlands South African National Biodiversity Institute +27 12 843 5200 +27 79 497 3229 u.bahadur@sanbi. org.za
Road alternatives study for export of coal from Moatize Mine to Beira	Mozambique	06/2010	08/2010	Feasibility assessment of the export of coal by road from Moatize Mine to Beira Port	Transport logistics assessment and environmental and social assessment	Social assessment	1	Vale Mozambique	Fatal flaw identification and assessment of social impacts	R100 000 for social component	Camilla Lott, Value Environmental, +258 82 301 9586 Camilla.lott@vale.co.mz

Project Title	Project Location	Date:		Description of the Project	Role of Firm in the Project	Own Role in the Project	Time involved (man months)	Name of Client	Contract Outcomes	Contract Value	Reference
Moatize Mine Expansion and Nacala Corridor & Port Project	Mozambique and Malawi	03/2010	01/2011	Expansion of Moatize Mine, development of rail corridor to Nacala Port for export of coal	Environmental and social impact assessment	Socio-economic baseline and impact assessment	2	Vale Mozambique	Socio-economic baseline report, socio-economic impact assessment report	R680 000	Camilla Lott, Value Environmental, +258 82 301 9586 Camilla.lott@vale.co.mz
Upgrading of Staff Villages in Etosha National Park	Namibia	05/2010	10/2010	Upgrading and establishment of new staff villages in Etosha National Park	Environmental and Social Impact Assessment for upgrading of staff villages in Etosha National Park	Socio-economic Impact Assessment, Census and socio-economic survey of all staff villages in the Park, development of Public Health and Safety Awareness Plan	3	Millennium Challenge Account Namibia	Census and socio-economic survey report, socio-economic impact assessment report, public health and safety awareness plan	R 650 000	Timo Mufeti, Director: Environmental & Social Assessments. Millennium Challenge Account Namibia Tel: +264 61 410 400 Fax: +264 88 616 502 Mobile: +264 81 1244417
Zanzibar Urban Services Project	Stonetown, Zamzibar, Tanzania	02/2010	06/2010	Environmental and social impact assessment for the proposed Mizingani Seafront Development in Stonetown, Zanzibar	Undertaking environmental and social impact assessment	Supervision of social impact assessment	2	Aga Khan Trust for Culture	In progress	R 2 400 000	Karen Shippey, Aurecon Environmental Services, +27 21 481 2400, karen.shippey@af.aurecongroup.com

Project Title	Project Location	Date:		Description of the Project	Role of Firm in the Project	Own Role in the Project	Time involved (man months)	Name of Client	Contract Outcomes	Contract Value	Reference
Project Performance Evaluation for two Transport and one Power Project	Zambia, Botswana and Lesotho	02/2010	03/2011	Evaluation of three infrastructure projects funded by the African Development Bank to determine their relevance, effectiveness and environmental and socio-economic impact	Data collection and analysis, and production of project performance evaluation reports	Undertaking socio-economic component of the evaluations	4	African Development Bank	In progress	R 400 000 for socio-economic component	Mohamed Hedi MANAI Division Manager Project & Program Evaluation Division Operations Evaluation Department African Development Bank BP 323 Tunis – Tunisia Tel. + 216 7110 2416 Cel. + 216 98 702 976
Olifants River Water Resources Development Project Phase 2	Limpopo and Mpuma-langa Provinces, South Africa	12/2009	ongoing	Design and construction of two bulk water transfer pipelines to augment water supply to communities and industries in Limpopo and Mpumalanga Provinces	Engineering design, construction monitoring, environmental and social supervision and support to land acquisition	Management of landowner consultation, generation of socio-economic baseline profile, input into pipeline route refinement, support to land acquisition process, resettlement planning	12	Trans-Caledon Tunnel Authority (TCTA)	In progress	R 900 000 for social/ land acquisition component	Liza van der Merwe, Land Acquisition Manager, TCTA, +27 12 683 1200, lvdmerwe@tcta.co.za
Socio-economic impact assessment survey for the Cradle of Humankind and Dinokeng Projects	Gauteng Province, South Africa	09/2009	12/2010	Socio-economic impact assessment survey for the Cradle of Humankind World Heritage Site and Dinokeng Blue IQ Projects	Undertaking socio-economic impact assessment	Project manager, socio-economic specialist	4	Gauteng Provincial Government	In progress	R 2 000 000	Shadreck Matanhire, Deputy Director – Fundraising, Cradle of Humankind World Heritage Site & Dinokeng Blue IQ Projects, +27 11 355 1814, SHADRECK.MATANHIRE@gauteng.gov.za

Project Title	Project Location	Date:		Description of the Project	Role of Firm in the Project	Own Role in the Project	Time involved (man months)	Name of Client	Contract Outcomes	Contract Value	Reference
Environmental and Social Impact Assessment for five quarries	Angola	08/2009	08/2010	Establishment of quarries to be used in road construction at the following sites in Angola: Quicabo, Ucua, Barro do Dande, Uche Pequeno and Porto Amboim	Undertaking environmental and social impact assessment	Design and implementation of social impact assessment	2	Conduril	In progress	R 1 200 000	Arthur Soares, Aurecon Angola, +258 21 49 3632, arthur.soares@af.aurecongroup.com
Construction of Siphofaneni Bridge and upgrading of Siphofeneni-St. Phillips Road	Swaziland	08/2009	03/2010	Construction of Siphofaneni Bridge and upgrading of Siphofeneni-St. Phillips Road in Siphofaneni Region, Swaziland	Detailed design, supervision of construction, environmental and social impact assessment, assistance with tendering evaluation for works	Design and implementation of socio-economic impact assessment	4	Delegation of the European Commission in Swaziland	Environmental and Social Impact Assessment Report submitted to Swaziland environmental authority	R900 000 for environ-mental and social impact assessment	Christof Batzlen, Team Leader, RDMU, +268 404 45 60, christof.batzlen@rdmu.org
Environmental and Social Impact Assessment for upgrading of 'Muela Hydropower Station	Lesotho	06/2009	09/2009	Undertaking environmental and social impact assessment for proposed upgrading of hydropower station through installation of additional turbine	Undertaking environmental and social impact assessment and development of environmental and social mitigation/ management plan	Undertaking social impact assessment and development of social mitigation/ management plan	2	Lesotho Highlands Water Commission	Environmental and Social Impact Assessment Report submitted to Lesotho National Environmental Secretariat	R950 000 (R300 000 for social component only)	Charles Mwakalumbwa, LHWC, sec@lhwc.org.ls

Project Title	Project Location	Date:		Description of the Project	Role of Firm in the Project	Own Role in the Project	Time involved (man months)	Name of Client	Contract Outcomes	Contract Value	Reference
Social and environmental screening of Moatize Phase 2 rail corridor alternatives through Malawi	Malawi	07/2009	12/2009	FEL 2 study of alternative routes between Moatize and Nkaya Junction for export of coal from Moatize mine to the Port of Nacala	Environmental and social study; geotechnical and route alignment study	Undertaking social and resettlement component of the Environmental and Social Study	4	Vale Mozambique	Comparative assessment of alternatives submitted to client	US$ 190 000 for environmental and social study	Camilla Lott, Value Environmental, +258 82 301 9586 Camilla.lott@vale.co.mz
Brits Ferrochrome Smelter Environmental Impact Assessment	North West Province, South Africa	05/2009	09/2009	Environmental and social impact assessment for proposed ferrochrome smelter near Brits	Undertaking socio-economic impact assessment and development of social and labour plan	Design and implementation of socio-economic impact assessment, development of social and labour plan	2	Benfico SA	Social specialist study delivered to client	R180 000	Lulu Labuschagne, Quanto Environmental Solutions, +27 72 124 5980, llabuschagne@qesolutions.co.za
Cronimet Environmental Impact Assessment	Limpopo Province, South Africa	02/2009	09/2009	Environmental and social impact assessment for proposed chrome mine near Thabazimbi	Undertaking socio-economic impact assessment	Design and implementation of socio-economic impact assessment	4	Cronimet Mining South Africa	Socio-economic impact assessment specialist report	R200 000	Tracey Gardiner, TWP Environmental Services, +27 11 798 4810, TGardiner@twp.co.za
Fish Impact Study for Drakensberg Pumped Storage Scheme	Kwa-Zulu Natal, South Africa	01/2009	08/2009	Study of impacts of proposed changes in scheme operating regime on fish biodiversity	Managing the project and synthesising results of specialist studies	Managing the project, report writing, client liaison	3	Eskom	Completed impact assessment report	R900 000	Tobile Bokwe, +27 11 800 2303, Tobile.Bokwe@eskom.co.za

Project Title	Project Location	Date:		Description of the Project	Role of Firm in the Project	Own Role in the Project	Time involved (man months)	Name of Client	Contract Outcomes	Contract Value	Reference
Moatize Feasibility Study	Mozambique	01/2009	03/2009	Update and Development of Studies to Evaluate the Transport of Coal from Moatize Coal Mine to Nacala and its Shipment	Cost estimate for environmental and social mitigation and resettlement, and identification and cost estimate of additional studies required	Cost estimate for social mitigation and resettlement, and identification and cost estimate of additional studies required to develop full social impact assessment, social mitigation and resettlement plans	4	Vale Mozambique	Socio-economic and resettlement chapters in Environmental component of Feasibility Study Report	R9 million; R900 000 for social/ envir. component only	Camilla Lott, Value Environmental, +258 82 301 9586 Camilla.lott@vale.co.mz
Sudan Rural Roads Rehabilitation Project	Southern Sudan	06/2008	08/2011	Upgrading of 7000 km of rural roads in Southern Sudan	Identification, prioritisation and detailed design of roads to be upgraded	Social assessment for roads to be upgraded	5	Government of Southern Sudan	Development Plan, Environmental and Social Assessment, Detailed design of roads included in Year One of upgrading programme	R370 000 for environmental and social component	Patricia Wachata, Roads Dept., Ministry of Transport and Roads, Southern Sudan. patriciagibril@gmail.com
Kabanga Nickel Project	Tanzania	08/2007	11/2008	Environmental and social impact assessment for a proposed nickel mine in western Tanzania.	Development of Resettlement Action Plan for relocation of 234 households from project site and compensation for loss of assets by a further 100 households	Coordinated a census and socio-economic survey, statistical analysis and GIS mapping of results, assisted in compilation of a resettlement action plan.	3	Kabanga Nickel Company	Completed Resettlement Action Plan	± R 2 million	David Brown, Golder Associates, +1 (905) 567 4444, DBrown@golder.com

Project Title	Project Location	Date:		Description of the Project	Role of Firm in the Project	Own Role in the Project	Time involved (man months)	Name of Client	Contract Outcomes	Contract Value	Reference
Bakouma environmental and social impact assessment	Central African Republic	06/2007	12/2008	Environmental and social impact assessment for a proposed uranium mine.	Undertaking specialist studies, public consultation and environmental authorisation process	Conducted surveys and data analysis, participated in the compilation of a resettlement action plan and social impact assessment for the proposed Bakouma Mine Project in the Central African Republic.	4	Areva-UraMin	Completed socio-economic and resettlement baseline reports	R 6 million for social, resettlement & envir. studies	Serge Ngandu, Areva, +27 11 783 5056, serge.ngandu@areva.com
Resettlement Action plan for Kriel Colliery	Mpumalanga Province, South Africa	05/2007	12/2008	Resettlement of mining-affected non-landowning households		Compilation of a resettlement action plan for the relocation of twenty homesteads in the vicinity of operations of Kriel Colliery.	2	Kriel Colliery, Anglo Coal	Completed resettlement action plan & negotiation for resettlement site	R400 000	Claire Logan-Delagey, Anglo Coal, +27 17 617 1115, CLogan-Delagey@anglocoal.co.za
Lower Usuthu Irrigation Project	Swaziland	12/2004	06/2008	Resettlement planning and implementation for 127 households displaced by the reservoir and other bulk infrastructure and a further 200 by the irrigation development.	Facilitation of stakeholder consultation in resettlement planning process; development of Resettlement Action Plan; implementation of resettlement; development of environmental Comprehensive Mitigation Plan; compilation of Completion Report	Development of Completion Report evaluating resettlement & compensation outcomes by comparing project objectives, budget and planned activities to actual implementation, and the evaluation of monitoring activities that had been undertaken to date.	1	Swaziland Water and Development Enterprise	Resettlement Completion Report submitted	±R 2 million	Sam Sitholess, SWADE, sitholess@swade.co.sz

Project Title	Project Location	Date:		Description of the Project	Role of Firm in the Project	Own Role in the Project	Time involved (man months)	Name of Client	Contract Outcomes	Contract Value	Reference
Development of supporting documentation for authorisation for expenditure - land access and control programme for Ahafo Gold Mining Project Stage 2	Brong-Ahafo Region, Ghana	03/2007	04/2007	Resettlement planning process as part of the environmental and social impact assessment for the proposed Ahafo Gold Mining Project Stage 2	Development of budget and framework for land access and control programme (including resettlement action plan) to support the submission of an authorisation for expenditure to Newmont Head Office.	Development of budget, development of logframe for land access and control programme, report writing	2	Newmont Ghana Gold Limited (NGGL) – subsidiary of the Newmont Mining Company	Completed budget and programme framework submitted	R250 000	Brian Anderson, NGGL Owner's Representative, +233 21 701 1852, Brian.anderson@newmont.com
Social baseline for the proposed Rusumo Falls hydroelectric power plant	Rwanda, Tanzania and Burundi	05/2007	06/2007	Feasibility studies for a proposed hydroelectric power plant at the border between Tanzania, Rwanda and Burundi.	Conducted a rapid baseline social analysis for the proposed project	Conducted a rapid baseline social analysis fieldwork, analysis and report writing.	1	World Bank	Submitted Inception Report, Draft Report & Final Report	R650 000	Jakob Granit / Mary Bitekerezo, World Bank, Kampala, Uganda, +256 41 236825, jgranit@worldbank.org / mbitekerezo@worldbank.org
Socio-economic impact assessment for the proposed Rustenburg Deeps Project	North-West Province, South Africa	02/2007	05/2007	Environmental Impact Assessment for a proposed platinum mining project	Socio-economic impact assessment	Conducted a socio-economic impact assessment, including fieldwork, data analysis and report writing.	2	Anglo Platinum	Submitted scoping report and impact assessment reports	R100 000	Nadia Mol, SRK Consulting (EIA lead agent), +27 11 441 6168, +27 82 321 3914, nmol@srk.co.za

Project Title	Project Location	Date:		Description of the Project	Role of Firm in the Project	Own Role in the Project	Time involved (man months)	Name of Client	Contract Outcomes	Contract Value	Reference
Land use assessment for the proposed Holcim - South Africa Alternative Fuel Resources project	North-West Province, South Africa	03/2007	05/2007	Environmental Impact Assessment for the proposed expansion of the Holcim cement plant	Land use baseline study and impact assessment	Management of the land use assessment study, data collection, data analysis, GIS work, production of maps, report writing.	1	Mark Wood Consultants	Delivery of land use assessment specialist report	R70 000	Mark Wood, +27 11 327 1567, markwood@global.co.za
Scientific writing for the University of Pretoria	Pretoria, South Africa	10/2006	03/2007	Production of the Annual Research Report of the University of Pretoria	Writing of articles on research accomplishments of University staff members	Freelance science writing for the Annual Research Reports of 2004, 2005, 2006 and 2007. Included interviews with various researchers, the compilation of six full-length articles and several shorter research highlights.	3	University of Pretoria	Submission of articles to editorial board	R200 000	René Bosman, +27 82 454 6363, renewrite@gmail.com
Support to social services for Ahafo Gold Mining Project Stage 2	Brong-Ahafo Region, Ghana	08/2006	04/2007	Stakeholder consultation as part of the Environmental and Social Impact Assessment for the proposed Ahafo Gold Mining Project Stage 2	Stakeholder consultation programme and social responsibility programme for the proposed project	Compilation of public consultation and disclosure plan, design of public disclosure materials, compilation of information resource toolkit for public consultation staff.	3	Newmont Mining Company	Development of public awareness materials and submission of public consultation and disclosure plan	R 2 million	Brian Anderson, NGGL Owner's Representative, +233 21 701 1852, Brian.anderson@newmont.com

Project Title	Project Location	Date:		Description of the Project	Role of Firm in the Project	Own Role in the Project	Time involved (man months)	Name of Client	Contract Outcomes	Contract Value	Reference
Human movement patterns at Waterval Smelter	North-West Province, South Africa	11/2006	11/2007	Assessment of health risks associated with emissions from the Waterval Smelter	Development of a mathematical model describing human movement and exposure incidence in the vicinity of the Waterval Smelter.	Fieldwork, data analysis, development of human movement aspects of the model, report writing.	2	Anglo Technical	Submission of model and supporting reports to the client	R 50 000 for development of human movement model	Frank Schwegler, Anglo Operations Limited – Anglo Technical Division, +27 11 638 2125 FSchwegler@anglotechnical.co.za
Social Impact Assessment of Closure of Beeshoek Mine and Development of New Mine near Kathu	Northern Cape Province, South Africa	06/2004	03/2005	Environmental and social impact assessment and public participation process for closure of Beeshoek Mine and development of new mine	Social impact assessment	Coordination and implementation of Social Impact Assessment	3	Assmang Iron Ore (subsidiary of African Rainbow Minerals)	Submission of social impact assessment report	R300 000	David de Waal, Mawatsan, +27 83 227 8681, davidde@bks.co.za
Social Impact Assessment for proposed OCGT power station near Atlantis	Western Cape, South Africa	01/2005	09/2005	Environmental and social impact assessment and public participation process for proposed power station	Social impact assessment	Coordination and implementation of Social Impact Assessment	3	Bohlweki Environmental	Submission of social impact assessment report	R200 000	David de Waal, Mawatsan, +27 83 227 8681, davidde@bks.co.za
Social Impact Assessment for proposed "Matimba B" coal-fired power station near Lephalale	Limpopo Province, South Africa	01/2005	09/2005	Environmental and social impact assessment and public participation process for proposed power station	Social impact assessment	Coordination and implementation of Social Impact Assessment	3	Bohlweki Environmental	Submission of social impact assessment report	R200 000	Malcolm Roods, malcolmr@ssi.co.za

Project Title	Project Location	Date:		Description of the Project	Role of Firm in the Project	Own Role in the Project	Time involved (man months)	Name of Client	Contract Outcomes	Contract Value	Reference
Drafting of public participation guidelines	Gauteng, South Africa	03/2005	07/2005	Drafting of public participation guidelines for the new EIA Guidelines published in terms of the National Environmental Management Act	Drafting guidelines	Supporting author and researcher	2	Department of Environmental Affairs and Tourism, South Africa	Publication of guidelines	R300 000	David de Waal (lead author), 083 227 8681
Socio-Economic Impact Assessment for proposed landfill in the Northern Areas of Johannesburg	Gauteng Provice, South Africa	10/2004	08/2005	Environmental and social impact assessment and public participation process for proposed landfill	Social impact assessment	Coordination and implementation of Social Impact Assessment	4	Jones & Wagner Engineering	Submission of social impact assessment report	R60 000	Tolmay Hopkins, +27 82 808 2693, tolmay@jaws.co.za
Survey of Water Awareness, Conservation and Demand Management	Botswana	07/2003	01/2004	Assessment of the impact of a national water conservation awareness campaign	National survey to assess awareness of campaign and changes in knowledge, attitudes and behaviour	Statistical data analysis, interpretation of survey results	3	Department of Water Affairs, Botswana	Submission of survey report	R300 000	David de Waal, Mawatsan, +27 83 227 8681, davidde@bks.co.za

Project Title	Project Location	Date:		Description of the Project	Role of Firm in the Project	Own Role in the Project	Time involved (man months)	Name of Client	Contract Outcomes	Contract Value	Reference
Strategic Options to Address Constraints and Challenges to Skills Development in the Water Services Sector	South Africa	02/2004	11/2004	Development of a strategy to address capacity constraints in the water services sector in South Africa	Assessment of capacity constraints in water services sector (including water services authorities countrywide), development of strategic options to address identified constraints	Analysis of statistical data on municipal performance, interviews with stakeholders, institutional analysis, data synthesis by means of Logical Framework Approach	4	Water Services Sector Leadership Group: Skills Development Sector Committee	Suite of 9 reports submitted to the client	R400 000	David de Waal, Mawatsan, +27 83 227 8681, davidde@bks.co.za

Curriculum Vitae – Karien Lotter

Education

Current : MA (Research Psychology), University of Pretoria, South Africa

2006 : BSoc Sci (Honours) (Psychology) cum laude, University of Pretoria, South Africa

2005 : BSoc Sci (Psychology) cum laude, University of Pretoria, South Africa

Employment

02/2012 – Date	Digby Wells Environmental, Social Scientist
09/2009 – 02/2012	Aurecon South Africa (Pty) Ltd, Social Scientist
01/2009 - 09/2009	Golder Associates Africa (Pty) Ltd, Johannesburg, South Africa, Social Scientist
01/2008 - 12/2008	Golder Associates Africa (Pty) Ltd, Johannesburg, South Africa, Intern Social Scientist
01/2007 - 12/2007	Golder Associates Africa (Pty) Ltd, Johannesburg, South Africa, Contract Social Researcher (concurrent with MA directed component)
01/2006 - 12/2006	Crowa Global, Pretoria, South Africa, Criminology Lecturer
01/2006 - 12/2006	University of Pretoria, Pretoria, South Africa, Assistant, Department of Psychology (concurrent with BSoc Sci)

Experience

Ms Lotter has been consulting as a social scientist since 2007, and specialises in social impact assessments, resettlement planning and stakeholder engagement. She has been involved in a number of international projects, including projects in Liberia, Zanzibar, Malawi, Mozambique, Central African Republic and Angola. Many of these projects were held to international best-practice standards stipulated by the IFC and World Bank. She has gained experience in a number of social research aspects, including quantitative and qualitative primary data collection, analysis and presentation.

Ms Lotter is in the final stages of completing her Master's degree in Research Psychology at the University of Pretoria. Her dissertation deals with the accuracy with which social impacts are predicted, and suggests possible reasons for inaccuracies in predictions.

Project experience

Compilation of a Resettlement Action Plan (RAP) and Implementation of Resettlement for the proposed new Khanyisa Power Station **(Witbank, South Africa). 08/2011 – date.** *Social Specialist.* The proposed construction of a new power station at Kleinkopje Colliery necessitates the relocation of two households. Joint responsibility for all aspects involved in resettlement planning. (Anglo American, South Africa).

Environmental and social impact assessment for the proposed construction of a new Shoprite Checkers branch in Nova Vida, Luanda, Angola **(Angola) 08/2011 – 02/2012.** *Social Specialist.* Conducting a Social Impact Assessment for the construction of a new Shoprite Checkers store, and authoring the reports. (Shoprite Checkers, Angola).

Social assessment and stakeholder engagement for the Simandou Project FEL 2 (Liberia). 06/2011 – 07/2011. *Social Specialist.* Assessing the attitudes of the locally-affected communities in order to determine whether they pose a safety risk for the geotechnical teams, and recommending and implementing awareness creation activities and procedures for grievance redress. (Vale, Brazil).

Social input into design criteria for the Ncala Corridor Project FEL 4 (Mozambique and Malawi). 04/2011 – 02/2012. *Social Specialist.* Providing input into the Engineering Design Criteria for the construction of a railway from Moatize to Nacala in Mozambique. (Vale, Mozambique).

Environmental impact assessment for the proposed AfriSam Cement Plant, mine and associated infrastructure in Saldanha **(Saldanha, Western Cape, South Africa) 03/2011 – 06/2012.** *Social Specialist.* Mining of limestone quarry near Saldanha, transportation of aggregate to a cement mill and production of cement. Conducting a Social Impact Assessment including reconnaissance site visit, focus group discussions and interviews, and authoring the report. (AfriSam, South Africa).

Relocation of Tete International Airport and re-alignment of road N9 **(Mozambique) 01/2011 - 04/2011.** *Social Specialist.* Due to its mining operations in Tete, Mozambique, Riversdale is required to relocate the Tete International Airport and realign a national road in the vicinity of the airport. Identification of fatal flaws and important social considerations during the site selection process. (Riversdale Capital Mozambique, Limitada).

Environmental impact assessment and environmental management plan for the Mbewu-Isundu 2 x 400kV transmission line project **(Kwa-Zulu Natal, South Africa) 12/2010 – 02/2012.** *Social Specialist.* Proposed construction of 2 x 400kV transmission lines from the proposed new Mbewu substation near Pietermaritzburg to the proposed new Isundu substation near Empangeni. Conducting a Social Impact Assessment, including reconnaissance site visit, focus group discussions and interviews, and authoring the report. (Eskom).

Environmental and social impact assessment for the proposed construction of

five new Shoprite Checkers branches in Angola **(Huila, Luanda, Huambo and Benguela - Angola) 07/2010 - 10/2010.** *Social Specialist.* Conducted Social Impact Assessment for each of the five sites where Shoprite Checkers propose to erect stores, and authored the reports. (Shoprite Checkers, Angola).

Social assessment for road alternatives study for export of coal from Moatize Mine to Beira **(Mozambique) 06/2010 - 10/2010.** *Social Specialist.* Identification of fatal flaws and risks associated with the transport of coal along the proposed route. Co-authored report. (Vale Mozambique).

Socio-economic baseline and impact assessment for Moatize Mine Expansion and Ncala Corridor Project **(Malawi) 03/2010 - 10/2010.** *Social Specialist.* . Compilation of baseline socio-economic profile based on secondary and primary information collected in the field. Managed and executed fieldwork. Identification and assessment of potential socio-economic impacts resulting from the proposed project. (Vale Mozambique).

Socio-economic impact assessment for the Zanzibar Urban Services Project **(Zanzibar) 02/2010 - 07/2010.** *Social Specialist.* Compilation of baseline socio-economic profile based on secondary and primary information collected in the field. Managed and executed fieldwork. Identification and assessment of potential socio-economic impacts resulting from the proposed project. Co-authored the Environmental and Social Impact Assessment Report. Provided input from a social perspective into the Environmental and Social Management Plan. (Aga Khan Trust of Culture).

Olifants River Water Resources Development Project Phase 2 **(Limpopo and Mpumalanga, South Africa) 12/2009 - date.** *Social Specialist.* Design and construction of two bulk water transfer pipelines to augment water supply to communities and industries in Limpopo and Mpumalanga Provinces. Conducting and managing an asset and infrastructure baseline using GIS software. Maintaining stakeholder database and conducting stakeholder consultation. Compilation of Resettlement Action Plans for each project phase. (Trans Caledon Tunnel Authority (TCTA)).

Cronimet Socio-economic Impact Assessment (SIA) **(Limpopo, South Africa) 09/2009 – 02/2012.** *Social Specialist.* The project involve a Socio-economic Impact Assessment (SIA) for the development of an opencast mine and ancillary infrastructure. Responsible for assistance with the design and implementation of a Socio-economic Impact Assessment (SIA). Involved for 2 person-months. (Cronimet Mining South Africa).

Socio-economic Impact Assessment (SIA) survey for the Cradle of Humankind and Dinokeng Projects **(Gauteng, South Africa) 09/2009 – 08/2010.** *Social Specialist.* The project involved a Socio-economic Impact Assessment (SIA) survey for the Cradle of Humankind World Heritage Site and Dinokeng Blue IQ Projects. Responsible for assistance with various project components including questionnaire

design, management of GIS data, project log frames and the drafting of public communications. Involved for 2 person-months. (Gauteng Provincial Government).

Construction of Siphofaneni Bridge and upgrading of Siphofaneni-St. Phillips Road **(Siphofaneni Region, Swaziland) 08/2009 - 01/2010.** *Social Specialist.* The project constructed Siphofaneni Bridge and upgraded Siphofeneni-St. Phillips Road in the Siphofaneni Region, Swaziland. Responsible for training, coordinating social surveys and focus group discussions, and also for analysing and reporting results. Also responsible for co-authoring the Social Impact Assessment (SIA) report. Involved for 1 person-month. (Delegation of the European Commission in the Kingdom of Swaziland, Government of Swaziland).

Social and environmental screening of the Moatize Phase 2 rail corridor alternatives through Malawi **(Malawi and Mozambique) 07/2009 - 12/2009.** *Social Specialist.* This project consisted of the FEL 2 study of alternative routes between Moatize and Nkaya Junction for the export of coal from Moatize Mine to the Port of Nacala. Responsible for conducting fieldwork in order to gather information for the multi-criterion analysis and screening. Involved for 0.5 person-months. (Vale).

Brits ferrochrome smelter: Environmental Impact Assessment (EIA) **(North West Province, South Africa) 05/2009 - 09/ 2009.** *Social Specialist.* The project included an Environmental Impact Assessment (EIA) and Social Impact Assessment (SIA) for a proposed ferrochrome smelter near Brits. Responsible for co-authoring the SIA report and conducting telephonic interviews. Involved for 0.5 person-months. (Beneficiation Company of Southern Africa (BenficoSA)).

Social Impact Assessment (SIA) for Hillendale Mine **(KwaZulu-Natal, South Africa) 04/2009 - 09/2009.** *Project Manager and Social Specialist.* Exxaro KZN Sands initiated the closure process for the Hillendale Mine operations, situated just southwest of Richards Bay, KwaZulu-Natal. As part of this process, a Social Impact Assessment needed to be conducted to determine the effects of the mine closure on the local communities and employees. Responsible for conducting the SIA, which included a comprehensive baseline profile of the area and an extrapolation of conditions in the foreseeable future; providing an indication of the probable social impacts arising from the mine closure in light of the existing socioeconomic conditions; as well as recommending the most feasible mitigation or enhancement measures. Involved for 2 person-months. (Exxaro KZN Sands).

Socio-economic baseline study for the new multi-products pipeline **(South Africa) 03/2009 - 04/2009.** *Social Specialist.* In this project, Transnet investigated the feasibility of the new multi-products pipeline running from Durban to an inland terminal at Jameson Park, near Heidelberg, South Africa. Involved in the Jameson Park sector of the pipeline. Responsible for on-site training of eight fieldworkers, including training in the use of Garmin Global Positioning System (GPS) units; conducting a baseline socioeconomic survey; spatially referencing the project area using a Garmin GPS unit; consolidating and analysing the socioeconomic and spatially referenced data; and compiling a socioeconomic baseline report. Involved

for 1 person-month. (Transnet).

Social Impact Assessment (SIA) for Benga coal mining **(Mozambique) 01/2009 - 01/2009.** *Social Specialist.* Located just outside Tete City in the Moatize District, Mozambique, Riversdale Mining proposed mining a concession area of approximately 4 500ha, which was home to over 1 500 households. Riversdale Mining commissioned a Social Impact Assessment (SIA). Responsible for reviewing the SIA report. Involved for 0.5 person-months. (Riversdale Mozambique).

Resettlement Action Plan (RAP) for Riversdale Mining **(Mozambique) 11/2008 - 09/2009.** *Social Specialist.* Located just outside Tete City in Moatize District, Mozambique, Riversdale Mining proposed mining a concession area of approximately 4 500ha, which was home to over 1 500 households. Riversdale Mining commissioned the development of a Resettlement Action Plan (RAP). Responsible for developing and refining a census and socioeconomic questionnaire; on-site training of 18 fieldworkers, including training on how to use Trimble Global Positioning System (GPS) units; supervising and coordinating fieldwork teams during implementation of the survey; daily downloading and consolidation of data using Pathfinder Office software; producing a GPS database and maps using ArcGIS software; and analysing data and presenting a comprehensive baseline profile of affected communities. Also responsible for drafting the initial entitlement framework document, as well as assisting with the establishment of local resettlement working groups. (Riversdale Mozambique).

Macro-economic study for the Benga coal project **(Mozambique) 10/2008 - 10/2008.** *Social Specialist.* In an attempt to determine the local, provincial and national economic benefits of the Benga project, a macro-economic study was conducted. Responsible for compiling the socioeconomic baseline profile using various Mozambican sources and for reviewing the completed study. (Riversdale Mozambique).

Social Impact Assessment (SIA) for Lonmin Akanani **(North West, South Africa) 10/2008 - 10/2008.** *Social Specialist.* Lonmin Platinum investigated the feasibility of developing a platinum ore body close to Mokopane. As part of the Environmental Impact Assessment (EIA) and the Environmental Management Plan (EMP), a Social Impact Assessment (SIA) was required. Responsible for compiling the baseline socio-economic profile for the Social impact Assessment (SIA), using various internet sources including census statistics, Integrated Development Plans (IDPs) and Local Economic Development plans (LEDPs). (Lonmin Platinum).

Social Impact Assessment (SIA) for Samancor Chrome **(Mpumalanga, South Africa) 10/2008 - 10/2008.** *Social Specialist.* In order to carry out an incremental expansion of its Middleburg Ferrochrome Plant, Samancor Chrome required a detailed SIA, the results of which were to be included in the Environmental Impact Assessment (EIA) report. Responsible for conducting the Social Impact Assessment (SIA), which included a comprehensive baseline profile of the area, an indication of the probable social impacts arising from the proposed expansion in light of the

existing socio-economic conditions and the likely economic benefits of the expansion, as well as recommending the most feasible mitigation or enhancement measures. (Samancor Chrome).

Social Impact Assessment (SIA) study for the Bakouma project **(Central African Republic) 10/2008 - 11/2008.** *Social Specialist.* UraMin Centrafrique SA (UMCSA), a subsidiary of UraMin Inc (UraMin), obtained an exploration lease near the town of Bakouma in the Mbomou District in the Central African Republic (CAR). As part of the pre-feasibility study, an SIA was conducted. Responsible for assisting with the development of a socioeconomic and asset questionnaire; on-site training of 13 fieldworkers, including training on how to use Garmin Global Positioning System (GPS) units; supervising and coordinating fieldwork teams during implementation of the survey; daily downloading and consolidation of data; producing a GPS database and maps using ArcGIS software; analysing data and presenting a comprehensive baseline profile of affected communities; and assisting with the compilation of the SIA report. (UraMin Centrafrique SA (UMCSA)).

Social Impact Assessment (SIA) for Harmony Gold Mines **(Free State, South Africa) 09/2008 - 09/2008.** *Social Specialist.* Harmony Gold Mines investigated the feasibility of re-mining their historic tailings dams in the vicinity of Welkom. As part of the Environmental Impact Assessment (EIA) an SIA was required. Responsible for compiling the baseline socioeconomic profile for the SIA using various internet sources including census statistics, Integrated Development Plans (IDPs) and Local Economic Development (LEDs) plans. (Harmony Gold Mines).

Social Reconciliation Plan (SRP) for the Jubilee Field Phase 1 Development **(Ghana) 09/2008 - 09/2008.** *Social Specialist.* Kosmos Energy investigated the feasibility of establishing an oil drilling field off the coast of the city of Sekondi-Takoradi, Ghana. Due to the contentious nature of the proposed project, Kosmos Energy recognised the need to establish a robust, transparent and accessible channel of communication for stakeholders and affected communities. Responsible for the development of a Social Reconciliation Plan (SRP) to define the processes and structures that are deemed necessary to establish a community engagement procedure where reconciliation was required. (Kosmos Energy).

Social Impact Assessment (SIA) for Umbani Power Plant **(KwaZulu Natal, South Africa) 08/2008 - 08/2008.** *Social Specialist.* The Umbani Power Company proposed the development of a 540MW fluidised bed boiler power plant in the KwaMbonambi area of KwaZulu-Natal. As part of the Environmental Impact Assessment (EIA) an SIA was commissioned. Responsible for consolidating previously obtained socioeconomic data with Global Positioning System (GPS) data; conducting a socioeconomic and asset survey to complement previously collected socioeconomic data; producing an integrated spatially referenced database of affected households; and compiling a comprehensive social baseline profile of the affected community. (Umbani Power Company).

Social and Labour Plan (SLP) for Batlhako Mining **(North West, South Africa)**

05/2008 - 05/2008. *Social Specialist.* Batlhako Mining proposed developing an open cast chrome mine in the Bojanala District Municipal Area in the North West Province. For its application to new order mining rights, Batlhako Mining commissioned the development of an SLP. Responsible for compiling the baseline socioeconomic profile for the SLP using various internet sources including census statistics, Integrated Development Plans (IDPs) and Local Economic Development (LEDs) plans. (Batlhako Mining).

Resettlement Action Plan (RAP) and socio-economic study for Arnot Colliery **(Mpumalanga, South Africa) 06/2008 - 06/2008.** *Social Specialist.* Arnot Colliery proposed expanding its operations to a neighbouring farm in Mpumalanga, South Africa. As such, the development of a RAP was commissioned. Responsible for facilitating various meetings and the subsequent drafting of minutes for stakeholders. . (Arnot Colliery).

Resettlement Action Plan (RAP) for Kabanga Nickel Project **(Tanzania) 03/2008 - 10/2008.** *Social Specialist.* The proposed Kabanga Nickel Project, located in Ngara District, Tanzania, investigated the feasibility of resettling households located on a concession area of approximately 4 000ha. Responsible for developing an integrated database comprising demographic, socioeconomic and Global Information System (GIS) data for 324 households. The database was used to produce a comprehensive baseline profile of affected communities to estimate the resettlement's related impact and suggest possible mitigation measures. Also responsible for analysing and presenting qualitative data obtained through focus group discussions, and identifying and describing Tanzanian laws applicable to involuntary resettlement and its various repercussions. (Kabanga Nickel Project).

Resettlement Action Plan (RAP) and socioeconomic study for Kriel Colliery **(Mpumalanga, South Africa) 01/2008 - 09/2009.** *Social Specialist.* As a result of subsidence, blasting and other mine-related activities, Kriel Colliery was obliged to resettle adversely affected households around the mining area. Responsible for the facilitation of various meetings and the subsequent drafting of minutes for stakeholders. Also responsible for undertaking a census and socioeconomic survey in the area, keeping photographic and spatial records, and producing a spatially referenced database of the affected households. (Kriel Colliery).

Social and Labour Plan (SLP) for Hlobane Mine **(KwaZulu Natal, South Africa) 12/2007 - 02/2008.** *Social Specialist.* Hlobane Colliery in KwaZulu-Natal, South Africa commissioned the drafting of closure objects to form part of its SLP. Responsible for drafting these objects, which included an assessment of the existing socioeconomic conditions in the area and projecting the implications of mine closure (Hlobane Mine).

Environmental Impact Assessment (EIA) and Social Impact Assessment (SIA) study for the Bakouma project **(Central African Republic) 10/2007 - 10/2007.** *Contract Social Researcher.* UraMin Centrafrique SA (UMCSA), a subsidiary of UraMin Inc (UraMin), obtained an exploration lease near the town of Bakouma in the

Mbomou District, Central African Republic (CAR). As part of the pre-feasibility study, an SIA was conducted. Responsible for the integration and analysis of socioeconomic data and for compiling the baseline socioeconomic profile to be included in the SIA. (UraMin Centrafrique SA (UMCSA)).